



BUSINESS TECHNOLOGY LEADERSHIP



THE 14TH ANNUAL
**CIO ENTERPRISE
VALUE AWARDS**

11 Industries
11 Honorees
11 Successful Strategies
1 Grand Winner

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FREE CODE



Inside the Buying and Selling of Open Source

BY CHRISTOPHER KOCH

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FEBRUARY 15, 2006 | VOL/19 | NO/9

2006 Enterprise Value Awards



Competitive Advantage

A BRIEF HISTORY OF I.T. VALUE | 60

This year's Enterprise Value Awards honorees exemplify the guiding principle of IT: Data is power, and it's the job of IT to help businesses turn that data into competitive advantage. **By Elana Varon**

Innovation

HIGHWAY TO VALUE | 66

General Motors built the OnStar system according to a simple value proposition—helping drivers on the road helps sell cars. That's why it's our Grand Winner.

By Ben Worthen

IT Value

WINNERS GUIDE | 76

A complete guide to all 2006 Enterprise Value Awards honorees, plus why they were honored. **Compiled by Al Sacco**

more »

Open Source

COVER STORY | FREE CODE FOR SALE | 48

Open source is becoming a vital piece of enterprise infrastructures. Open-source development is becoming a moneymaking proposition. And now understanding the companies that sell and the communities that create open-source code is becoming a critical part of the CIO's job.

By Christopher Koch

CitiStreet CIO
Barry Strasnick
says that as long as the code behind his middleware remains open, he doesn't have to worry about vendors. "I can simply go find someone else to support it," he says.

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Lauren O'Brien
CIO, Providence Health System—Oregon



Ralph Szygenda
Group VP and CIO, General Motors



Timothy Talbot
Senior VP and CIO, PHH Arval

A man in a white shirt is pouring water from a bottle over a woman's head. The woman is laughing and holding a glass. They are at a party with other people in the background.

Now

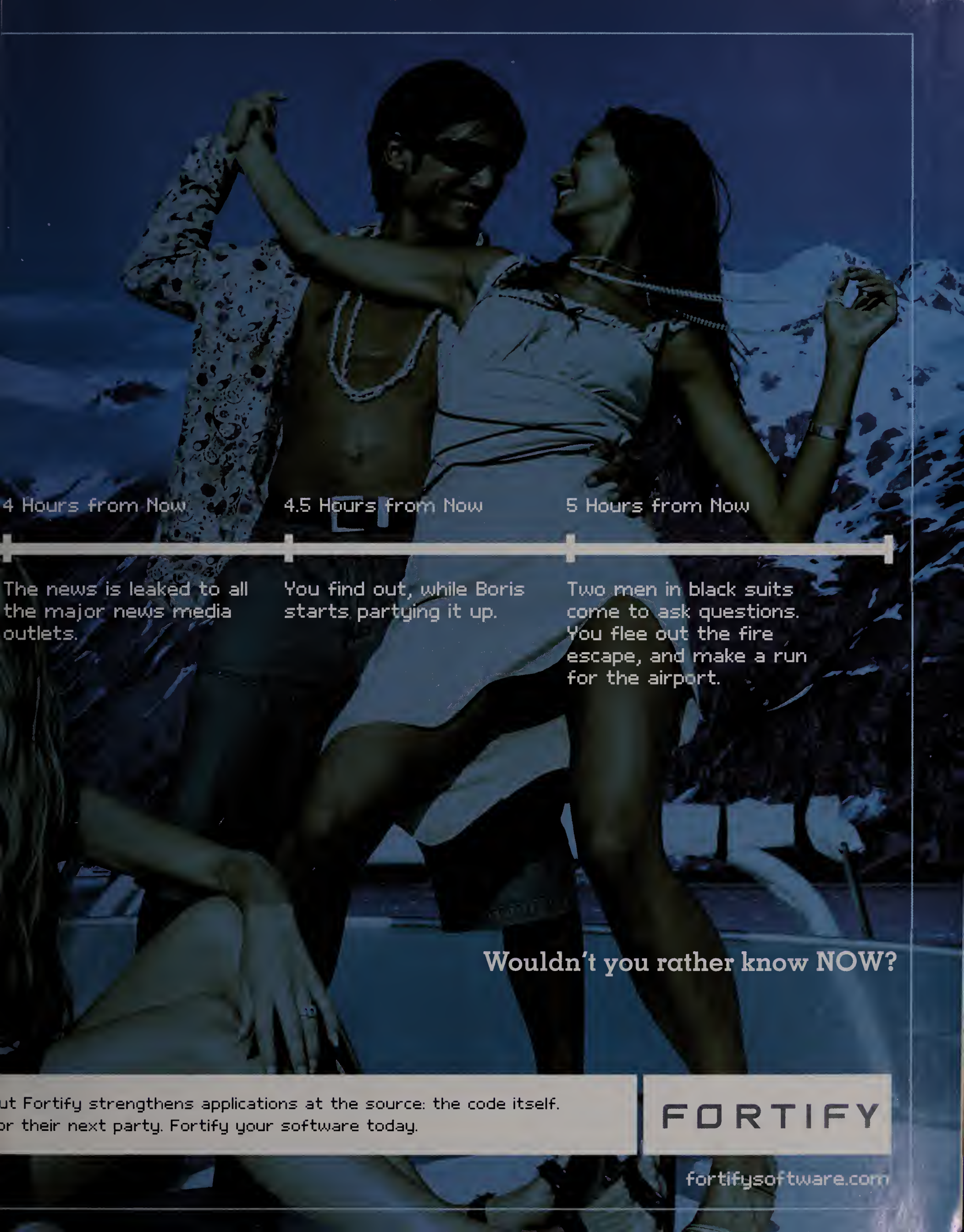
2 Hours from Now

A Russian hacker accesses your company's database despite your firewall and leaves with 8 million credit card numbers.

3 Hours from Now

The credit card numbers are posted on a Romanian message board.

Protecting your networks is not enough. Hackers can get around firewalls by attacking weak applications. What's that mean for you? A little more sleep at night. While the hackers worry about who will be paying.

A couple is dancing on a beach at night. The man is wearing sunglasses and a patterned shirt, and the woman is wearing a light-colored dress. They are both smiling and looking at each other. A timeline is overlaid on the image, with three points marked: '4 Hours from Now', '4.5 Hours from Now', and '5 Hours from Now'. The background is a dark, silhouetted beach scene with palm trees and a full moon.

4 Hours from Now

The news is leaked to all the major news media outlets.

4.5 Hours from Now

You find out, while Boris starts partying it up.

5 Hours from Now

Two men in black suits come to ask questions. You flee out the fire escape, and make a run for the airport.

Wouldn't you rather know NOW?

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Three quick steps to building systems so your midsize company can compete with the big boys. **Total Leadership** by Mike Hugos

Communication

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Every CIO who has to manage expectations, IT strategy and staff morale should most certainly be doing a blog. But make sure you ask yourself the right questions first. **It's All About the Execution** by Michael Schrage

VoIP

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How the nation's largest behavioral health-care company successfully managed its call center's transition to VoIP. **Peer to Peer** by Jeff Emerson

Web 2.0

AJAX ARRIVES FOR THE ENTERPRISE | 42

You too can use the tools that make Google so cool—but mind the thorns. **Essential Technology** by Christopher Lindquist

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Dear Diary, By RFID Tag 7-0622-01002

By Scott Kirsner

Wh@t's Hot Online

GOING TO CHINA OR INDIA?

If your colleagues from overseas were planning a visit in late December, you'd tell them to change plans. There are three holidays in India in March. Do you know when they are and if businesses are shuttered then? Find out. Go to www.cio.com/021506 to look for **Calendar Tips**.



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Tools of change: HP OpenView software | HP Services



change + hp



The Constancy of Change

Being a CIO is like living in New England. If you don't like the weather, wait a minute; it's sure to change.

The pace of change is accelerating, as it has so many times before. But what's different this time is that change is penetrating all aspects of the CIO's world, including the way IT contributes to the business, the way software is developed and acquired, and the way CIOs communicate with the people who work in their companies and beyond. All change has ripple effects and needs to be managed. And it can have unintended consequences too.

In "Highway to Value" on Page 66, Senior Writer Ben Worthen profiles the evolution of GM's OnStar system, this year's Grand Winner of the CIO Enterprise Value Awards. OnStar is a model of the powerful way in which IT can contribute value to a business and the kind of journey a company has to take to get there.

The vanguard of value has changed dramatically since we published our first Enterprise Value Award issue 14 years ago. Back then, a lot of applications were basic automation plays, and *any* customer-service initiative was novel. OnStar, however, delivers in multiple dimensions: not just improving

but changing the terms of customer service and interaction; increasing safety; driving quality into the core product (GM's cars); and laying the groundwork for future development.

GM executives learned that real innovation rarely results from a linear process. It starts with smart people who have the knowledge and imagination to envision the new technology's possibilities and the latitude to experiment creatively. But that's not enough. Few efforts are instant home runs, and OnStar was no exception. But because those leading the effort measured their results, sought and analyzed customer feedback dispassionately, adjusted their focus to what they gleaned (making sure it aligned with the company's mission) and broadly communicated the new focus, they were able to dramatically change the significance and value of OnStar to GM and its customers.

Our cover story, "Free Code for Sale," by Executive Editor Christopher Koch, sheds light on a major shift on the vendor side that's changing the way CIOs both acquire and develop software. The simple days of build versus buy (or outsource) are gone forever. With the entry of open source into the mainstream, CIOs must consider a broader and more complex set of options: open source plus service; open source mixed with proprietary; open source plus hardware; and so on. Koch explains it all and tells you how to successfully navigate this potentially confusing plethora of options.

Finally, columnist Michael Schrage issues a call for CIOs to start blogs to communicate with their staff and colleagues. According to our 2006 "State of the CIO" research (see the Jan. 1 issue at www.cio.com/O10106), the personal skill most crucial to CIO success is the ability to communicate effectively, and a blog can certainly be a useful tool for that. "In time," Schrage writes in "Think Before You Blog" on Page 34, "C-level blogging will be as prevalent as C-level speeches, telecons and PowerPoint presentations. How well they're done will say volumes about the executives' style and substance—or lack thereof." That being the case, CIOs should start small and learn fast, gathering lots of feedback along the way.

Change can be exciting, but when there's so much of it going on, it's a challenge to get caught up in it without getting swept away.

OnStar is a model of the powerful way in which IT can contribute value to a business and the kind of journey a company has to take to get there.

A handwritten signature in black ink that reads "Abbie Lundberg". The signature is fluid and cursive, with a long, sweeping underline.

Abbie Lundberg, Editor in Chief
lundberg@cio.com

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What Kind of CIO Are You?

Transformational or transactional, what's important is creating competitive advantage



Are you using IT to drive transactions or to generate business transformation?

This question usually arises when your CFO tries to argue that your IT budget should be flat—or should even be shrinking—based on the notions that outsourcing is here to stay, Linux is “free,” and a dollar today should get you more than it did yesterday. The intensity of the debate that ensues tends to depend upon whether your CXO peers view IT as a cost center or a means to drive innovation.

But I always find this either/or formulation misguided. It disparages the amazing work many IT organizations have done improving the business by cutting costs in a very difficult economic climate. It ignores the fact that IT has done this while dealing with nightmarishly difficult issues like compliance, project backlogs and security. (For the hard numbers on these issues, see our “State of the CIO” research at www.cio.com/state.) And it implies that if you are not transforming, then you are not strategic.

To me, this is nonsense. We just don't live in that kind of black-and-white world.

Given the complexity of IT's role, it's fascinating to read the recent McKinsey article, “The Next Revolution in Interactions” (which can be found at www.mckinseyquarterly.com). McKinsey argues that competitive advantage can best be sustained if one moves from transactional or transformational IT to tacit IT, defined in the article as the ability to analyze information, grapple with ambiguity and solve problems. (Christopher Koch's blog, “Koch's IT Strategy,” provides a terrific overview at www.cio.com/blogs.) Tacit work creates capabilities and advantages that rivals can't easily duplicate.

Former Secretary of Labor Robert Reich recently stated that “any professional service that can be boiled down into predictable steps, even if they are complicated steps, is now exportable to South Asia.” CIOs now more than ever need to move beyond technology to provide business leadership and clarity while maneuvering in a very complex world. McKinsey gives some additional evidence that doing so will not only benefit your business but also help make you, personally, exportproof.

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PHOTO BY CHRISTOPHER HARTING



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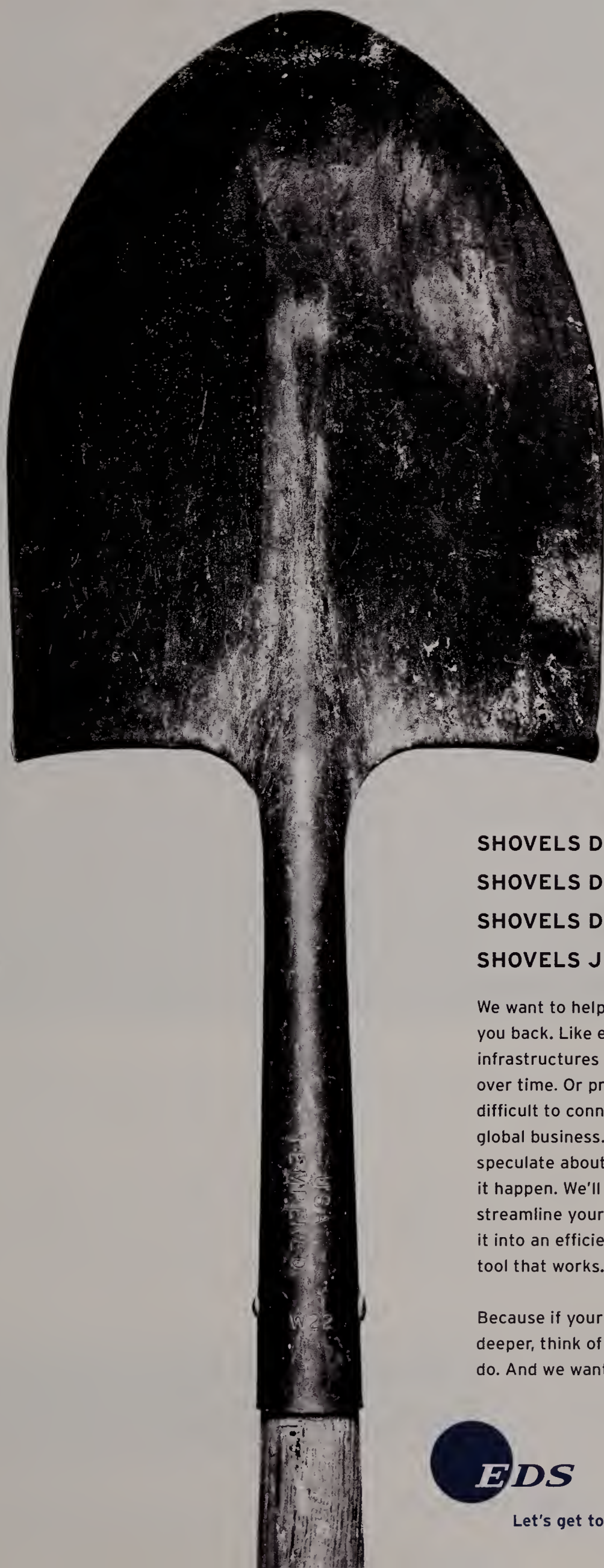


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I place the burden of avoiding the 70 percent of errors you mentioned on the shoulders of the programmers. They know what questions must be asked and what types of answers are required for the programming to run smoothly.

The emphasis is in understanding the nature of a customer's problem. For example, hardware problems resulting from software problems often blindside those with the problem because they can understand and explain their problem only in terms of "hardware" malfunction.

Customers don't understand branching and Boolean logic and what-if scenarios. Programmers don't take the time to fully understand what the customer is looking for and what happens when customers stray from the typical approach and use alternative processes.

More emphasis should be placed on the following skills:

1. Communication skills as they relate to IT and practical industrial applications.
2. Programmers getting to know intimately the product or process for which they are programming.
3. Programmers asking the right ques-

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In my 10 years of IT experience, and three years as project manager, I have been baffled by the amount of poor communication between the IT department and the company business units. It seems they all say one thing, document another and produce something totally out of scope.

Over the years, my career has not been a joyride, and I grow grayer by the minute. Fortunately, my IT-business background allows me to play a linguist role between all participants in the corporate Tower of Babel.

The ability to communicate surpasses any college degree or IT certification. I just hope that in time, company managers are more keen in making communication and listening skills a top priority over the tons of certificates we are required to have to get a job interview or a promotion.

ANONYMOUS
Project Manager – IT Consultant

Communication is by far the most required asset of an IT professional and the one most lacking.

The problem IT has is that the work they do is usually for someone else, and thus the need to communicate is even greater. The schools need to teach a course on how to get the most out of IT.

Most managers, directors and executives don't have a clue on how best to work with the IT department. Since there isn't a set of best practices, every CEO organizes his IT department differently, and the day-to-day interactions with other departments are unique in each company. The schools need to prepare all business majors on how to handle this relationship.

As a result of this lack of understanding, we have high CIO turnover and ongoing dissatisfaction with the results of IT. Many of the problems are due to IT's inability to communicate. But also at fault is a lack of understanding of how to work with IT.

PAUL INGEVALDSON
Retired CIO
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A Vote for Certifying IT Workers

Your call for a mandatory national certification program for IT workers is about the sanest thing I've ever seen proposed in an IT magazine ["Certifiably Sane," Nov. 15].

Working as closely as I have with IT types over the past decade or so, it's never ceased to amaze me how little attention has been given to systems engineering issues in IT, particularly in the face of the increasing rate of change of technology.

That small problem in the knee bone would be worry enough on its own, but with the foot or hip bones being replaced or upgraded every so often, the ability to deterministically know functionality, reliability, supportability and maintainability with certainty becomes increasingly important, particularly where public safety is a concern.

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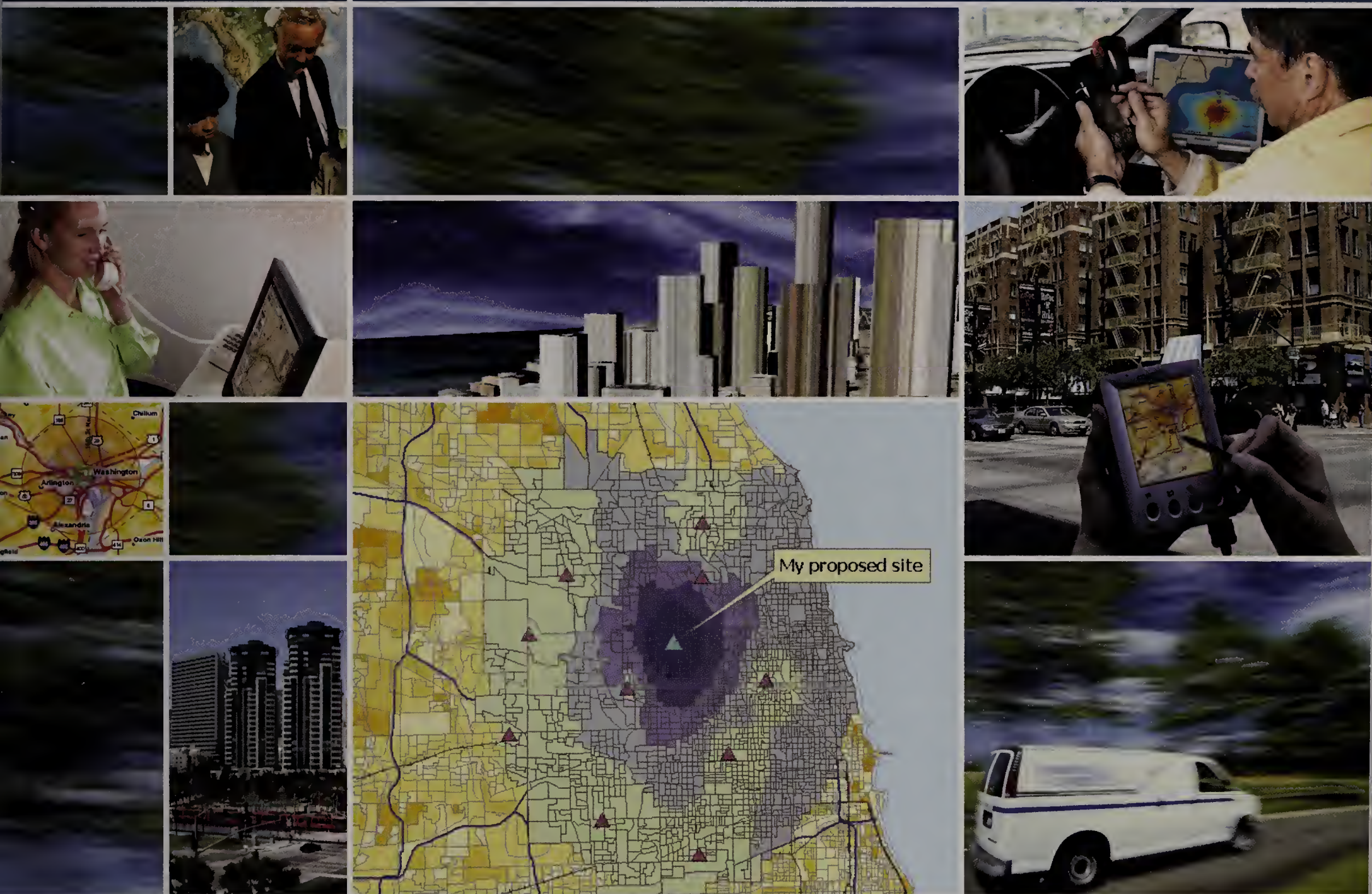
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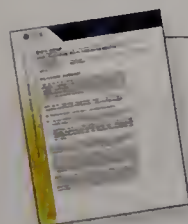


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A close-up portrait of Chris McCann, President of 1-800-Flowers.com, looking slightly to the right with a subtle smile. The background is a soft-focus field of yellow and pink flowers.

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trendlines

EDITED BY ELANA VARON

NEW * HOT * UNEXPECTED



America's Identity Theft Capital

PRIVACY In 1997, Arizona's Maricopa County (which includes Phoenix) became the first government entity in the nation to post public records online. The decision garnered praise from the local press and won Maricopa a place in the Smithsonian's prestigious National IT Innovation Collection. But that move has come back to bite the county in a most unpleasant way: Maricopa now claims the highest rate of identity theft in the nation, and local IT officials say the two statistics are inextricably linked.

"People have gone online and

been able to find information like names, addresses, Social Security numbers, financial data and [information about] divorce and civil suits," said Richard Dymalski, principal IT consultant to Maricopa County in a recent interview. "And that's a dangerous thing."

Now Maricopa is rethinking its kitchen-sink approach to online records, Dymalski says. And the county's ordeal is sparking a growing debate among municipalities and states nationwide over what kind of public data should be posted online and in what form.

Continued on Page 24

World Cup Passes on Smart Soccer Ball

SPORTS I.T. World Cup soccer players should be happy: A new chip-enabled soccer ball won't be ready for use at the World Cup soccer tournament in Germany this June, according to the Fédération Internationale de Football Association (FIFA).

The world soccer body also took a pass on using the ball at the FIFA Club World Championship games in Tokyo this past December. "The technology isn't perfect yet," says Jan Runau, a spokesman with

sportswear manufacturer Adidas-Salomon, which supplies the official game balls for the tournaments. "We have to be 1,000 percent certain that it works perfectly before we can deploy it in professional soccer games." He declined to say when that would be.

Engineers working on the smart ball had hoped it would be ready for the World Cup tournament. The technology is based on an application-specific integrated circuit chip (radio frequency identification

chips are one example) with a transmitter to send data. The chip, suspended in the middle of the ball to survive acceleration and hard kicks, sends a radio signal to the referee's watch when the ball crosses the goal line. Similar chips, but smaller and flatter, have been designed for players' shin guards.

The ball is being developed by Adidas, the Fraunhofer Institute and software company Cairos Technologies.

—John Blau



The H-1B Scam

STAFFING Immigrants with H-1B visas that hold programming jobs are paid an average of \$13,000 less per year than their native-born counterparts, according to a report by the Center for Immigration Studies. Apple, Microsoft and Oracle hire the most H-1B workers. Those who work for Apple are the best paid—75 percent of them earn the median wage or above for their position. At Microsoft, 45 percent earn more than the median. Oracle's H-1B workers are the worst paid; 86 percent earn wages in

the bottom quarter of the pay range for programming jobs.

Researchers for the Center for Immigration Studies say the data on the H-1B visa program, which was designed to enable companies to hire workers with special skills, suggests that the visas are being abused in order to exploit cheap labor. The report recommends, among other steps, that employers be required to pay H-1B workers more than the average wage, to pressure employers to use the visas only for the most highly skilled workers.

—Elana Varon

Turning Clicks Into Calls

E-COMMERCE An online ad that yields a phone call: Now that's counter-intuitive. After all, isn't the point of such advertising to reduce phone time by directing customers to a website? That's true for some businesses, but others—especially service providers—prefer to encourage prospective clients to dial them up.

Say hello to pay-per-call. These online ads, which appear as sponsored links on search engine sites, prompt potential customers to make contact by phone rather than a website. Advertisers pay when a customer calls. As with pay-per-click, the cost of a pay-per-call ad is determined by a bidding process among advertisers. The higher the bid, the higher an ad appears in its search category.

One early adopter, American Incorporators Ltd. (AIL), which provides incorporation services, says the sales conversion rate on its pay-per-call ads is 8 percent to 10 percent, compared with 1 percent to 2 percent for its pay-per-click ads. "Ours is a business with a lot of questions from clients," says David Clarke, AIL's marketing manager. If the company can answer prospects' initial questions, it's easier to sign them up as customers, he adds.

AIL buys its pay-per-call ads from Ingenio. Ingenio assigns advertisers unique toll-free phone numbers for their ads so that it can track whether one has triggered a call; it charges advertisers a minimum of \$2 per call received.

Ingenio's chief marketing officer, Marc Barach, acknowledges that pay-per-call is in its infancy. But the potential for growth is immense: The Kelsey Group recently forecast that spending on such ads could reach between \$1.4 billion and \$4 billion in 2009. Verizon is also selling pay-per-call ads, and Google is testing the concept.

—Juan Carlos Pérez

ID Theft

Continued from Page 23

Before the Internet, if people wanted information from public records—such as land purchases, tax information or divorce cases—they would have to mosey on down to their local county registry, fill out a form with their name and hand it to the county clerk. Beginning in the late 1990s, the clerks realized they could streamline their workloads if they put those records online. But few municipalities considered the fact that those records contained sensitive information about individuals.

Such information, which can be plucked from anywhere in the world just by going online to county sites such as Maricopa's, was ripe for abuse by identity thieves. Combine that with the fact that Phoenix has the second-highest rate of methamphetamine abuse in the nation (with a large number of meth addicts who need cash quick) and a high number of illegal immigrants searching for fake identities, and you have a recipe for disaster. "Arizona offers a climate unusually conducive to identity theft," wrote Maricopa County Attorney Andrew Thomas in *The Arizona Republic* last year.

According to Dymalski, the county is asking its departments to redefine sensitive information so it is not posted willy-nilly on the Web. Maricopa has also instituted a policy of keeping data online for only two years. Dymalski says that an automatic purging schedule ensures that most of the sensitive information posted during the county's technology-ho years is no longer online.

In the meantime, Dymalski says, policymakers at a state or even national level should be considering rules for how public records can be accessed. "Technology races ahead at the speed of light, and the laws necessary to go from a paper world to an electronic world have not been put in place," he says. "We have to come up with safeguards for this information." —Alison Bass

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Three Tips for Working a Room

SHMOOZING Most CIOs, who are introverts at heart, would rather lead a global SAP deployment than work a room. Yet, effective networking is often a means toward better business partners, better employees and better jobs. Here's some advice on how to shmooze from four IT executives.

1

Avoid generic events.

Instead, join a group or attend events that feature topics of interest. Then follow up with individuals whose opinions you find most interesting, advises

Dave Clarke, CTO of the American Red Cross.

2

Think vertically.

"You always hear that you should dress for the job you want. It's the same with networking," says Chris Feola, CIO of AskSam Systems and

president and CIO of NextPression. Join groups a CEO would join, such as a state business association or an industry forum.

3

Collaborate on a project.

Tom Morgan, senior VP and CIO of Dobson Communications, is working with other CIOs to establish best practices for information security. The

work you produce as a team will be useful and will give you credibility outside of your organization, Morgan says.

—Martha Heller

Heller is the managing director of the IT Leadership Practice at the Z Resource Group, an executive recruiting firm based in Boston. Find more networking tips at www.cio.com/021506.

washingtonwatch

EDITED BY ALLAN HOLMES

Privacy Debate Creates CIO Headaches

Rules on reporting data breaches in flux

After years of bipartisan cooperation on laws to protect consumer privacy, debates in Congress over protecting Americans' personal information are becoming more partisan and, thus, more controversial. As a result, the outcome of future privacy legislation is less certain, making it harder for CIOs



Rep. **CLIFF STEARNS** (R-Fla.)

to predict what they will have to do to comply with new rules.

In November, the House Energy and Commerce Committee voted along party lines to send a consumer privacy bill—the Data Accountability and Trust Act (DATA)—to the House floor. It was the first time any federal security or privacy legislation had caused such a divide, observes Behnam Dayanim, a privacy attorney with Paul, Hastings, Janofsky & Walker.

The bill, sponsored by Rep. Cliff Stearns (R-Fla.), would establish nationwide rules for companies when notifying customers of a data security breach that exposes their personal information such as

names, addresses, credit card numbers and Social Security numbers. The Senate is considering a similar bill.

The law would preempt existing state laws and, according to privacy experts and Democrats, would weaken them. For example, unlike California's notification law, which requires that companies tell customers of any security breach, DATA would require notification only if company executives determine there is "a significant risk" that information has been stolen. As such, scoffs Rep. John Dingell (D-Mich.), DATA's notification provisions are actually "no notice" provisions.

Many companies, because they have customers in California, base their notification practices on the California law. Republicans say their bill will provide relief for these companies because it would cut down on notices about breaches that do not expose consumers' data. But the bill could make work for CIOs because it requires companies that store consumers' personal data to identify security vulnerabilities and a method to mitigate them, something state laws do not demand.

Lawmakers will continue to wrangle over the measure this year. Meanwhile, Dayanim says, companies that store data from individuals from multiple states need to err on the side of caution and consider any security breach as requiring notification.

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Geoffrey A. Moore



DEALING WITH DARWIN

Dealing with Darwin: How Great Companies Innovate at Every Phase of Their Evolution

By Geoffrey A. Moore

Portfolio, January 2006, \$25.95

You Know What Happened to the Dinosaurs

A methodology for corporate evolution through innovation

TRENDLINES

BOOK REVIEW Consultant and author Geoffrey Moore has spent his career advising companies how to change and grow. His new book, *Dealing with Darwin: How Great Companies Innovate at Every Phase of Their Evolution*, posits that innovation is the path to growth, and that a company won't be around long unless it innovates successfully.

Large organizations are held back from innovating, Moore argues, by virtue of their suc-

cess. It's not that they're resting on their laurels; rather, they're unable to overcome the inertia of business processes and a workforce that have served them well.

A company must first choose the right kind of innovation to pursue. Moore identifies more than a dozen types of innovation, only one of which is the disruptive sort that creates new markets or business models. Which flavor you choose (and you should only choose one at a

time) depends on your company, its strengths and its competitive environment.

The challenge for executives is to redirect the company's resources to develop and market the innovation. Moore devotes the final section of his book to a template for doing this by centralizing, standardizing and optimizing business processes, and by outsourcing those that are no longer strategic.

While that isn't a new

formula, Moore makes a convincing case that companies fail to evolve because they apply the formula incorrectly; for instance, by automatically laying off employees whose jobs are outsourced. Instead, Moore says, organizations should take advantage of those employees and their experience by reassigning (or, as Moore puts it, "recycling") them to work maintaining established parts of the business that are still important to the company. Employees with experience bringing previous innovations to market can be dedicated to the next "invention."

Whatever you do, get busy. The competition is gaining on you. —Elana Varon

What You Need to Know About Wine

SOFT SKILLS You can discuss the merits of Java and .Net with anyone who asks. But do you know what goes better with grilled salmon, a merlot or a pinot noir?

Knowing which wine to order at a corporate dinner is one skill that can help a CIO distinguish himself as a businessperson and save him from social embarrassment. "When you're asked to smell the cork, you need to be able to do that without looking like a geek," says Jeff Connery, a wine lover and CIO of two Canadian banks: Envision Financial in Langley, British

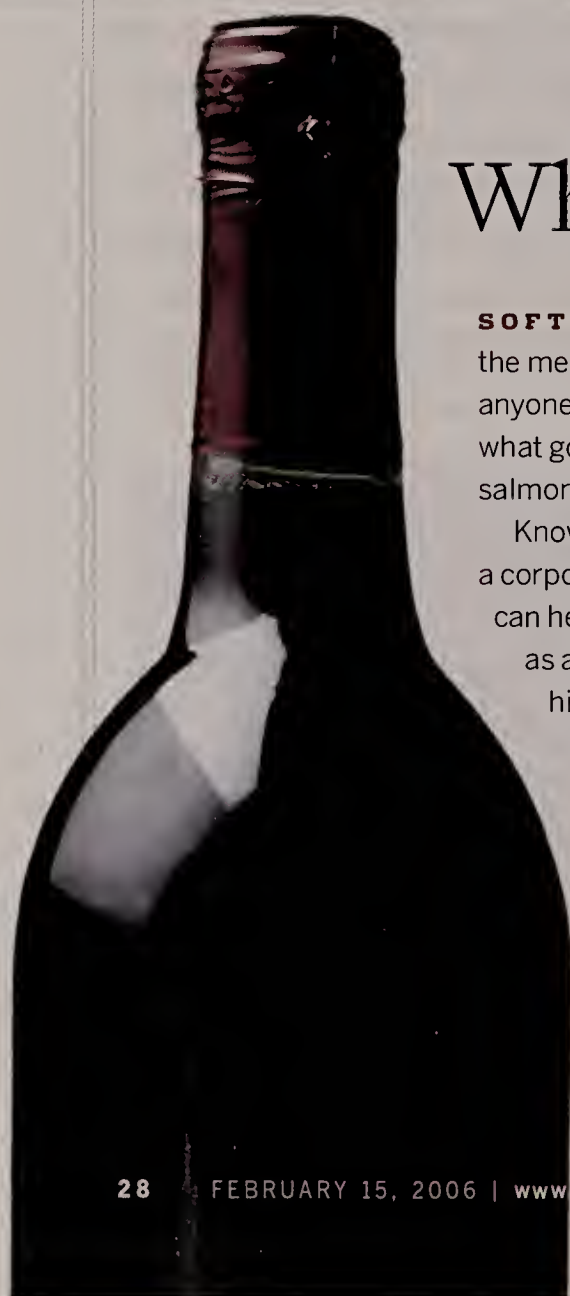
Columbia, and First Calgary Savings in Calgary. Notes Connery, "CIOs are not just computer people anymore. They are dealing with boards, other executives and clients. Knowing about wine rounds out one's business character."

To the rescue comes a new corporate wine studies program offered by the University of California at Irvine Extension. The six courses, each two to four hours long, teach how to pronounce wine names (try saying *vino nobile di montepulciano* three times fast), wine and food pairings, and wine etiquette (such as how to send a bottle back if the wine has cork in

it). Their courses include "Wine as a Business Tool," "Entertaining Your Multicultural Client" and "CEO/Executive Roundtable Wine Tastings."

"If you and I are sitting down to do a deal and have a lavish dinner, and [aside from] religious or health reasons, I order a Coca-Cola, you would think less of me," says Marlene Rossman, instructor and creator of the courses. Especially, she adds, in "image conscious" Southern California.

You should order pinot noir with your grilled salmon. Now if you can figure out which glass is yours, you'll have your social graces mastered. —Lauren Capotosto



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The World According To
ANDY



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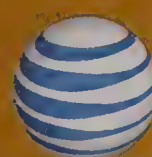
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by the numbers

BY LORRAINE COSGROVE WARE

IT Takes Expense Out of Procurement

Systems lower purchasing costs 20 percent at top companies

Companies that use IT effectively for procuring goods and services can save big bucks, according to The Hackett Group. The consultancy's study of what it calls world-class organizations finds that increasing spending on procurement technologies, as well as improving the use of existing technology investments, lowers overall procurement costs by as much as 20 percent. Top companies also reap greater returns from their investments in procurement technologies than other companies do—as high as 360 percent more than other companies typically see.

IT automates many of the transactions involved with procuring goods, such as order processing, scheduling and forecasting. Automation improves cycle times and reduces errors. As a result, fewer staff need to be dedicated to tasks such as operational support, order placement and forecasting. Instead, they can focus on more high-value activities like analyzing corporate spending patterns and aligning procurement with business strategy, says Christopher S. Sawchuk, Hackett's procurement practice leader.

Hackett defines world-class organizations as companies that rank in the top 25 percent on various efficiency metrics (such as staff levels, productivity, costs, cycle times) and effectiveness measures, such as ROI. According to the group, staff at world-class procurement organizations use online tools to communicate proposals, quotes or requests for information to suppliers 78 percent more often than their peers, and they are twice as likely to have access to suppliers' online catalogs.

Best Practices

1] Assess your investments.

Review how IT is supporting procurement currently. Find out whether employees are using the existing tools and processes, and whether they are using all or a portion of the functionality.

2] Evaluate processes.

Before applying any new technology, examine your procurement processes. Ensure that purchasing procedures in different parts of your company, such as receiving and payment schedules, are aligned.

3] Consult end users.

Work with the chief procurement officer or other procurement executive to learn what their staffers need to do their jobs effectively. Once you find out their priorities—whether it's visibility into total spending or supplier management tools such as pricing and shipping schedules or electronic ordering tools—you'll be able to invest time and energy where it's needed most.

TRENDLINES

How IT Cuts Purchasing Costs World-class procurement organizations...

...Have Smaller Staffs

Staff per \$1 billion procurement spending

World-class organization 44.9

Typical organization 89.2

Difference: 49.6%

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World-class organization 4,171

Typical organization 7,710

Difference: 46%

SOURCE: Hackett Group

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Move It or Lose

Three quick steps to building systems so your midsize company can compete with the big boys



In my personal life I am an easygoing guy. I like to take long walks through my Chicago neighborhood, which is downtown by Lake Michigan. I like to sit in a coffee shop and read a good book or visit with friends. In my professional life, however, I have been accused of being as easygoing as a drill sergeant. I am a CIO who is passionate about designing and building IT systems that drive business success.

What gives rise to this change of personality? It is the urgency I feel about getting things done. In the very competitive and fluid global economy in which we all operate, a key aspect of CIO leadership lies in ensuring the agile and innovative use of IT. There's no magic to this. To paraphrase a famous quote from Thomas Edison, the agile and innovative use of IT is 5 percent inspiration and 95 percent perspiration.

Let's talk about that 95 percent part. It means a lot more than just working hard. IT leaders can create a fast and flexible process to develop and deploy new business applications. That process has to enable agility by showing IT employees how to move forward in quick, focused steps. Since all jobs expand to fill whatever time is available, an agile process requires you to set an appropriate time frame for getting things done and then shape the job so as to finish it within the time available. Agility means that you are faster than your competition. Agile time frames are measured in weeks and months, not years.

Similarly, IT leaders can use process to boost innovation. An innovative process calls for people to feel a sense of urgency in order to overcome the inertia of doing things the same old way. Placing limits on the time and money that your employees can spend to solve a problem is a great way to create urgency. In the past, I have challenged my IT staff to create solutions that cost 10

I know the design work will cost 15% to 30% of the total project budget because if people are spending more than that, they are designing something too complex. More expensive projects will take longer than one to three months to design and then will take too long to build.

times less than what our competition is spending and that can be developed four times faster—what I call “10-4 performance.”

Three Steps to Agility and Innovation

Agility and innovation is a frame of mind that starts with the CIO. It's your job to put the proper process in place and make sure people use it. I have created my own three-step process called “Define-Design-Build.” It's a simple and easily understood guide through the three steps of developing any new system or business process.

Each step produces a well-defined set of deliverables and has tight time boxes and budget guidelines. You can probably figure out for yourself what deliverables should happen in each step. (E-mail me if you want my list.) More important is the way that this process enables agility and innovation.

The Define step takes two to six weeks and costs 5 percent to 10 percent of the total project budget. The Design step takes one

to three months and costs 15 percent to 30 percent of the total budget. The Build phase takes two to six months and costs 60 percent to 80 percent of the total budget. You may ask how I know these time frames without knowing the specifics of a project. My answer is that there is only that much time available if you are truly going to be agile. If your employees can't define what is needed within two to six weeks, then it certainly won't be an agile project.

Likewise, I know the design work will cost 15 percent to 30 percent of the project budget because if people are spending more than that, they are designing something too complex. More expensive projects will take longer than one to three months to design and then will take too long to build. In sum, if the work cannot meet these requirements, stop the project because whatever is being done is neither innovative nor agile.

Continued on Page 41



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Think Before You Blog

Every CIO who has to manage expectations, IT strategy and staff morale should most certainly be doing a blog. But make sure you ask yourself the right questions first.



A CIO with a global reputation in the financial services industry—and an ego to match—decided to launch his own internal blog to inspire his team. He thought it would improve communications and boost morale.

The man BlackBerry-blogged from the world's finest airport lounges, hotels and CIO conferences. For weeks, no thought was left unexpressed. A few thoughts were quite pithy; most were self-indulgent piffle. His camera-phoned photos of mountain views also invited smirks. The CIO's blog quickly became an in-house IT joke.

Irritated and/or amused employees forwarded their favorite snippets to colleagues and vendors. They weren't flattering. Worse yet, the firm's help desk and customer service personnel hated the cheap shots he fired at them in several "flogs"—part flame, part blog.

A few anonymous e-mails were quietly sent the CIO's way suggesting improvement. A sensitive sort, he interpreted these criticisms as a healthy sign he was hitting a nerve. So instead of cooling off, he turned up the heat. Bemused irritation became unhappy sniping. Barely a month later, his most biting blogs ceased. The posting frequency plummeted from three-a-day to weekly.

What happened? A friend of the CIO, who knew the man was hurting himself enterprisewide, made sure both HR and corporate counsel got a good look at some of the choicer entries. Polite phone calls and e-mail exchanges ensued: "It's really not a good idea for these things to be so openly posted. Could create legal problems for us. I'm sure you understand." Bye-bye, blogger.



WHO ARE THE KEY DECISION MAKERS AT GLOBAL HYATT?

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As netizens well know, blogs and ego can be an intoxicating brew—accent on the “toxic.” Of course, several companies—IBM and Sun Microsystems come to mind—do an excellent job of integrating blogs into their communications infrastructures.

Blogs at those companies become healthy platforms for collaboration as well as powerful tools for self-expression.

But should you—the CIO—have a blog? Is it worth the time, effort and risk? Yes. Of course. Every C-level executive who has to manage expectations, strategic direction, morale, uncertainty, risk and people's time should most certainly be doing a blog. Not doing a blog will become much like not doing e-mail; a willful failure to communicate that sends a message all its own.

In time, C-level blogging will be as prevalent as C-level speeches, telecons and PowerPoint presentations. These blogs may not be done well, but how well they're done will say volumes about the executives' style and substance—or lack thereof.

As ostensible leaders of digital innovation within their organizations, CIOs should be at the leading—not bleeding—edge of these emerging media. As C-level business leaders, they should be living examples—and yes, experiments—of using digital tools to become more effective executives. Lead by example. Blogs offer CIOs a relatively fast, easy and cheap way to do just that.

Create Conversation, Not Controversy

But what should I write? That's precisely the wrong question. The better question is, What do I want people to be talking about—and doing—after reading my blog? Why? Come up

with decent answers to that and you'll have a better than decent blog. You'll have a blog that creates conversation.

The trick—and it is a trick—is to recognize that business blogs aren't self-indulgent, self-expressions about what you

think is important but interactive invitations to get others to appreciate what you think is important. Blogs are about deciding what kinds of conversations, connections and communications you want to encourage.

Lead by example. Does that mean you want customers and suppliers to have access to your blog? Anyone in the enterprise? Or just your organization? Do you want to invite—and provide space for—comments and contributions? How about anonymous contributions? Will you drag and drop e-mail exchanges into your blog? How about project reviews and status reports? Do you see your blog as a strategic communication tool? Or an interactive opportunity to manage and influence daily operations? If you had to guess, how do you think your blog would evolve over time?

The beauty of these simple questions is that they force

Doing a blog will help you decide what kinds of conversations you want to encourage among your employees.

C-level executives to think tactically and strategically about both their professional priorities and the attention they want to call to them. That's just as true for a PowerPoint presentation, the budget spreadsheet and the urgent e-mail queue. They are about how we implement communications for implementing IT.

It's the Links That Make the Blog

What makes blogs different? Think link. The cliché de jour is that blogs are about the future of text and photos, podcasts, and so on. True, but that wildly misses the point: Truly dynamic blogs are about truly dynamic linking. Blogs are about the opportunity to link your insight with someone else's—and have them link their insight to yours.

Lead by example. Any blogging CIO who doesn't link to, say, an internal blog discussing customer survey research or a PDF white paper debating outsourcing issues or a vendor's FAQ response to a query or, yes, even columns in *CIO* completely misunderstands the power and purpose of the medium.

You may or may not want all your people doing their own blogs. You most surely want all your people aware of what matters and who they should be pinging if they need help, advice or support. Indeed, you probably want your blog to be seen as a hub where employees and suppliers can meet and network on the Web links that you have pointed to.

Whether you—or your enterprise—wants to take a “let a thousand bloggers bloom” approach is up to you. You can be as top-down or as bottom-up as you feel is best for the firm. Asking people in your shop to propose blogging guidelines is an excellent exercise in participatory management and design.

But whether blogs become as prevalent as PowerPoint or not is secondary. The primary issue is, what does your blog say about the kind of leader, manager and communicator you aspire to be? What conversations does your blog create? What kind of linking does your blog facilitate?

Bloggership isn't leadership per se. But the example of a good blog is an example of good leadership. Why? Because your people will take their cues from your blogging just as they do from your leadership style. Blogging is a skill that can and should be learned by C-level executives in general—and CIOs in particular. Lead by example. **CIO**

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PHOTO BY JOHN SOARES

Add a Comment

Are you doing a blog? How has it worked out? Share your hard-earned wisdom with Michael Schrage. Find the comments box on the online version of this article. Go to www.cio.com/021506.

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Smooth Talkin'

How the nation's largest behavioral health-care company successfully managed its call center's transition to VoIP

BY JEFF EMERSON



At Magellan Health Services, the nation's largest managed behavioral health-care company, our goal is to provide our nearly 60 million members with fast, efficient and expert service that connects them with the behavioral health-care help they need. Magellan covers one in four Americans, including health-plan enrollees, corporate employees and their dependents, and Medicaid and Medicare enrollees. Members receive a range of services, including employee assistance programs to help with the complexities of contemporary life, inpatient and outpatient mental-health services, substance abuse services and new services such as weight management. With 15 call centers that support clients across the country, technology plays a critical role in fulfilling our mission. When you are entrusted with managing people's sensitive behavioral health issues, missing a call or putting someone on hold is not an option.

In 2004, Magellan embarked on a large-scale financial turnaround. One part of that effort was a Chapter 11 filing to reduce the substantial debt Magellan had accumulated several years prior to that. In less than nine months, Magellan emerged from Chapter 11 a financially strong company. A second part of the turnaround involved redesigning the company's call-center operations to merge more than 30 locations into 15 call centers with five of our largest locations designated as Care Management Centers.

This consolidation significantly reduced operating expenses but placed a larger burden on the remaining call centers, making stability and promptness in answering members' calls even more important. We had to ensure that we would answer calls within 30 seconds. Magellan call centers nationwide handle

ILLUSTRATION BY PHIL WHEELER

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an average of 30,000 calls per day, so we knew this would be no easy feat.

How did we achieve this tall order?

We knew that there were pockets of time throughout the day, across time zones, where a portion of our staff was less utilized and therefore free to accept incoming calls. So to operate more efficiently, we searched for a technology that would enable us to better balance calls across geographical boundaries and reroute calls to those service associates who could respond immediately without incurring additional interstate toll charges. We also needed a way to reduce the total cost of supporting our telecommunications infrastructure. Our solution was voice over IP, or VoIP.

The immediate benefits of VoIP were clear. We would:

- Eliminate the high cost of intrastate long distance and inbound toll-free calls. VoIP routes calls digitally over Magellan's WAN rather than over conventional telephone lines, bypassing that expense. Moreover, because the calls are sent over our WAN, they are independent of the geographical limitations of conventional telephone lines.
- Eliminate the cost of interoffice call transfers.
- Reduce the number of voice circuits needed to support the calls in our call centers.
- Greatly reduce the number of PBXs (expensive conventional telephone switches) needed to support our business operations.

The Encryption Bugaboo

Implementing VoIP, however, turned out to be a challenge. To begin with, we needed a product that provided an incoming automated call distribution (ACD) system. We wanted the ACD to facilitate our need for live answers within 30 seconds, while also providing a streamlined, user-friendly manner to track telephonic activity and report on a monthly basis to the employers who purchase our services. After carefully reviewing several options, we decided to partner with Avaya to implement our VoIP solution.

While the selection process was relatively straightforward, what followed was anything but.

In early 2003, we began by first implementing a VoIP configuration in our test labs and then quickly progressed to a pilot implementation using Magellan employees as the test population. We converted all of the interoffice calls made by IT operations management to VoIP. Then we did the same for IT operations staff in our two largest call centers. Next, we rolled out VoIP to non-call-center staff in both of these call centers so that any problems encountered would not affect our critical customer-facing business operations. When we were confident of the VoIP infrastructure, we opened it up to all traffic between the two largest call centers (but only for calls between Magellan employees) and then included a third major call center for which we rerouted calls to eliminate intrastate toll charges. Today, two of our call centers are using VoIP to handle member calls.

To add further complexity to this endeavor, Magellan is now required by privacy statutes to use network encryption in order to protect the confidentiality of the extremely sensitive member information that we handle every day. Because voice traffic cannot handle much delay, VoIP requires that information be prioritized to meet its quality of service (QoS) requirements. But encryption makes that prioritization difficult because it hides the contents of the packets, and as a result the QoS software can't tell which packet should have the higher priority.

We soon discovered that encrypting VoIP resulted in slow network performance.

Indeed, early in the implementation, the resulting poor call quality caused us to shut down the VoIP links for short periods while we resolved the latency issues. We have worked with both Cisco and Avaya to configure the routers and switches to improve QoS to ensure fast transport and throughput for VoIP packets. Now that we have solved the latency problem, we will be moving all of our call centers to VoIP for all calls, including member calls, by the middle of this year.

We have already seen significant ROI. Using VoIP for interoffice calls has saved Magellan an average of \$3,000 per month. The elimination of intrastate calls by rerouting them into interstate calls will provide an additional savings of \$2,000 to \$3,000 per month in each office. In fact, one Magellan office serving a Medicare contract has achieved a savings of \$5,000 per month.

With VoIP, we have also been able to better leverage remote personnel without increasing operating costs. In addition, VoIP allows Magellan to consolidate PBXs without having to consolidate offices, enabling us to retain our staff in geographically dispersed locations. The PBX consolidation enables Magellan to reduce by almost 30 percent the recurring cost of multiple voice T1 lines and eliminate the need to pay for a long-distance carrier to forward calls to our after-hours call centers. Once we implement VoIP for all member calls, Magellan will also eliminate the high cost of toll-free call-routing features.

The initial impetus for Magellan to implement VoIP was to ensure that we answer member calls within 30 seconds while reducing operating costs. We have achieved that goal. Ultimately, VoIP will permit Magellan employees to be completely independent of physical PBXs and other telephony devices. With VoIP, we can make or take telephone calls wherever there is an Internet connection. **CIO**

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Continued from Page 33

How to Achieve 10-4 Performance

Here are some other things I have emphasized in the Define-Design-Build process. First of all, every project needs a full-time person in charge who has the skills and authority to get things done and is totally committed to success. I call that person the system builder. Without such a person, no project can succeed. Make sure you have a good system builder for every project you start.

Next, build robust, "80 percent" solutions rather than seeking perfection. Avoid the temptation to overengineer your systems in an attempt to handle every possible combination of events. Trying to build systems that can handle everything increases the cost and complexity in an exponential fashion. Instead, develop systems to handle only the routine, day-in, day-out transactions, and have people, not computers, handle the exceptions and the one-off occurrences. This is how you build systems for 10 times less than your competition.

Remember that big systems always constitute a collection of smaller subsystems. So once the Define step is completed, big, multimillion-dollar projects can be broken up into smaller projects to develop each subsystem. Instead of having one big project team design and then build everything, this arrangement allows multiple smaller teams to design and build sub-

systems in parallel, under the overall direction of the system builder. This is how you get things done four times faster than your competition.

At first people may accuse CIOs who adopt a process such as Define-Design-Build of being overly demanding and unreasonable. I admit my three steps have also been called "Move it! Move it! Move it!" But do not relent. What you ask is possible—IT groups can achieve 10-4 performance levels. Give people the training they need and the opportunities to learn by doing, but do not lower your standards or extend the time frames.

As your employees learn the process and become adept at using it, you will see a change. People will develop an air of self-confidence and a positive, "can do" attitude. My IT group at Network Services, a mid-market company, was recognized with two CIO 100 awards in a three-year period. Agile and innovative IT enabled my company to grow revenue by more than 20 percent each year during that time. **CIO**

Mike Hugos is the former CIO of Network Services and the author of two books, *Building the Real-Time Enterprise* and *Essentials of Supply Chain Management*. He can be reached at mhugos@yahoo.com. Send your comments to leadership@cio.com.



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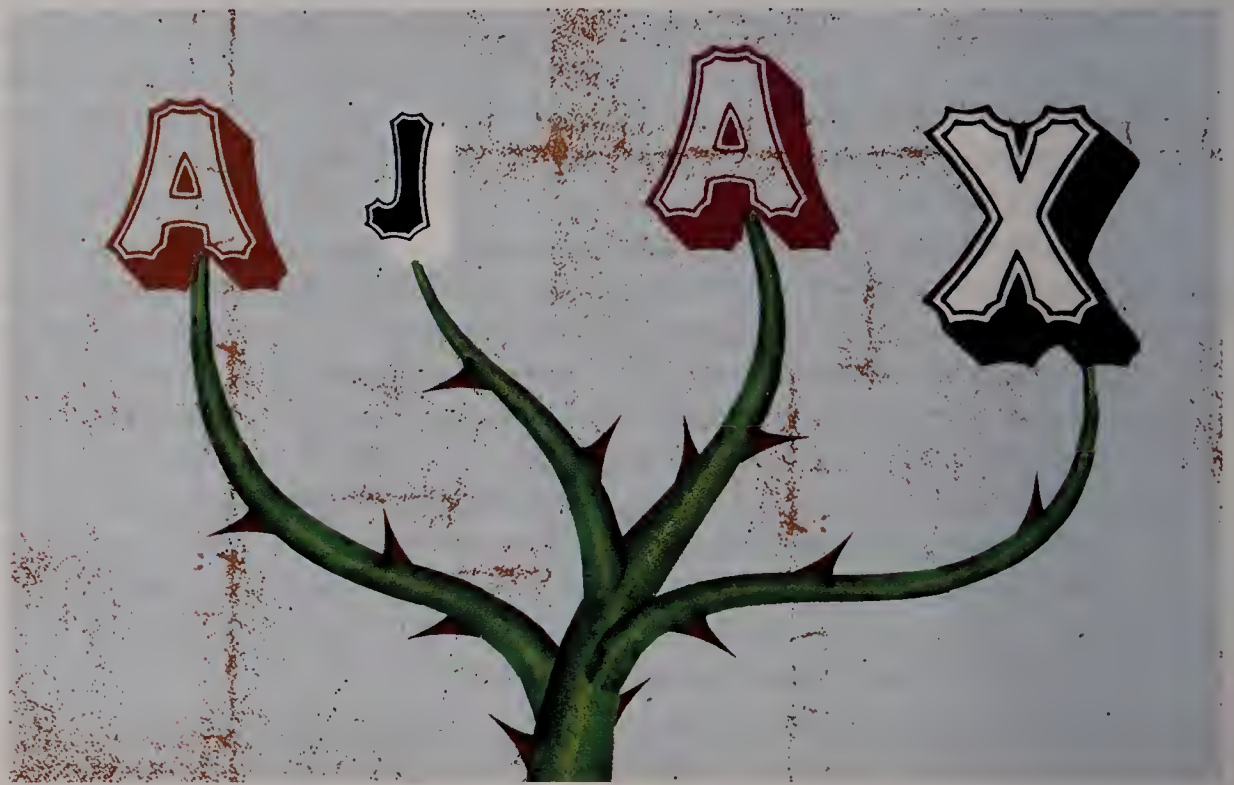
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ESSENTIAL FROM INCEPTION TO IMPLEMENTATION—I.T. THAT MATTERS technology

Edited by Christopher Lindquist
clindquist@cio.com



You too can use
the tools that make
Google so cool—
but mind the
thorns

Ajax Arrives for the Enterprise

BY CHRISTOPHER LINDQUIST

WEB 2.0 | Like vintage bowling shirts and wearing your pajamas to school, asynchronous JavaScript with XML, a.k.a. Ajax, seems to have begun as a West Coast fad. But it's quickly gaining acceptance worldwide as developers look to design Web interfaces that hook users with their speed and ease of use.

But while clothing trends come and go, Ajax looks like it may stick around, offering Web developers a means to create rich clientlike applications on webpages without resorting to huge amounts of code or forcing users to download plug-ins. However, like every hot new Web technology, CIOs must hold firm against the regular barrage of "if Google is doing it, why can't we?" and find the underlying value in Ajax for their particular companies.

Where Ajax Came From

Freely draggable satellite images on Google maps. Instant spellchecking in Gmail. They're cool features. Admit it. The launch of tools such as those revitalized interest in both the online mapping and Web-mail markets. With a flourish, Google demonstrated that browser-

ILLUSTRATION BY BRIAN STAUFFER

HOW CAN WE MAKE SURE INNOVATION
DOESN'T HAPPEN ONLY IN R&D?

HOW DO WE CREATE NEW VALUE WITHOUT
CREATING COMPLICATIONS?

HOW COULD WE TURN VOLATILITY INTO
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The background of the advertisement features the dark silhouettes of two people, a man and a woman, facing each other in conversation. The man is on the left, seen from the back and side, while the woman is on the right, in profile. They are set against a light, hazy background that suggests an outdoor setting like a beach or a park.

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based applications could support rich clientlike capabilities and performance—without the rich client.

The secret sauce was a clever combination of JavaScript and XML. XML-based data could be pre-downloaded into the user's browser where JavaScript code could quickly perform operations on it—sorting a list of products or e-mail on the fly, for instance, or letting you drag map images around the screen—without the tedious back and forth between browser and server.

Even people deeply engaged in Ajax development suggest going slowly.

The idea was not new: Developers have been using JavaScript and locally cached data to offer rich interfaces since the '90s. But the stars had not yet aligned. Most users still connected to the Internet via dial-up connections, making background data downloads tricky. Browser compatibility with JavaScript was hit or miss. And limited processing power on client PCs could throttle the performance of all but the most simple JavaScript applications.

Over time, JavaScript began to fall out of vogue in favor of server-side scripting—which guaranteed compatibility across browsers—and client-side development tools such as Macromedia's Flash, which provided a clear path to rich applications even if it did require a browser plug-in to operate.

But in the past 18 months, JavaScript has seen a resurgence, driven by the likes of Google, Yahoo and even Microsoft. Just as important was the coining of a short, memorable and highly marketable term for the collection of technologies currently behind many of the most well-known applications. In a Feb. 18, 2005, blog entry by Jesse James Garrett, cofounder of user-experience consultancy AdaptivePath, asynchronous JavaScript and XML got a name: Ajax.

How Ajax Got So Smokin'

Once named, the hype followed. Ajax applications were hot, and the benefits they pro-

vided were easy to see, even for non-techies. Plus the whole idea of "client-free," rich Web applications fit well into an assortment of David versus Goliath prognostications about the future of software development, with Bill Gates often playing the role of the giant. Stories about Ajax and apps developed with the tools appeared everywhere, including publications such as *The New York Times* and *BusinessWeek*. Want to get some attention for your startup? Announce that you are developing your product in Ajax.

Looking to warm up your résumé? Add Ajax to your skills list.

Ajax's new branding also coincided conveniently with the dawning of Web 2.0, a vaguely defined movement that promotes the idea of the Web as a platform for easily remixable, highly flexible services—and Ajax looked promising as the glue that could hold those services together.

How Not to Get Burned

Even people deeply engaged in Ajax development suggest going slowly. Take a deep breath and learn what the technologies can and can't do and what skills you need on staff to take best advantage of the tools.

Ajax, at least for now, is best suited to making user interfaces more intuitive and useful. Pop-up, context-sensitive information balloons (like those on Netflix.com), data lists that regularly update without reloading a page: These are the types of things that Ajax can offer right now to help you spruce up your browser-based tools.

Dave Jenkins, CTO at online outdoor equipment retailer Backcountry, used Ajax to add a feature to a browser-based ERP application: When a customer-support representative closes out a support ticket, the line on the screen blinks yellow twice and then fades away—a simple but effective visual cue that something has happened to the data. Jenkins argues that this is far better

Ajax Online Resources

A collection of resources for budding Ajax developers.

Ajax is a collection of technology aimed squarely at the Web, so it's no surprise that most of the best information about Ajax development is available at the click of a mouse button. Here are some choice examples:

- ▶ **The blog entry by Jesse James Garrett that started all the Ajax talk.**
<http://blog.jjg.net/weblog/2005/02/ajax.html>
- ▶ **The Script.aculo.us JavaScript resource sharing site.** Look here for free JavaScript libraries and demos of Ajax applications built using those libraries.
<http://script.aculo.us>
- ▶ **The Prototype JavaScript Framework.** A required component for working with the Script.aculo.us libraries.
<http://prototype.conio.net/>
- ▶ **The Simple Ajax Toolkit.** It is what it says it is. It's also open source and, therefore, free.
www.modernmethod.com/sajax
- ▶ **Microsoft's Atlas Ajax tools prototype.** The final version won't ship until next year, but this provides a taste. Go to www.asp.net, then click on the Atlas tab.
- ▶ **Backbase: Ajax development toolset.** Available in free and commercial versions.
www.backbase.com
- ▶ **Ajax without JavaScript is merely AAX.** Check here for a blog entry about best practices for JavaScript.
www.thinkingandmaking.com/entries/63

—C.L.

HOW DO WE MANAGE SUPPLY,
DEMAND AND CHAOS?



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than the screen simply refreshing and the user noticing that the data has disappeared.

But even the simplest-seeming features can be daunting. Creating solid Ajax-based applications requires in-depth knowledge of JavaScript plus sufficient back-end database mojo to make sure everything works.

On the positive side, the flurry of interest in Ajax has resulted in a mini-boom of commercial tools and open-source kits designed to ease Ajax development (see "Ajax Online Resources," Page 44). Andy McCown, a lead developer at international advertising firm Chiat Day (which is currently testing Zimbra, an open-source, Ajax-based e-mail/collaboration tool), says the company first began looking at Ajax in 2004, but at the time there were few libraries available to help developers create their trial applications, forcing everyone to roll their own toolsets. And at the time, Ajax's value proposition wasn't there. But, he says, "Ajax has come on very strong in the past six months. It's changing what people expect out of Web applications. We

tures can downgrade gracefully if they're going to expose their sites to the general public. Users, for instance, might be running an incompatible browser or may even have JavaScript turned off as a security precaution. But providing the downgrade capability—so a clever Ajax animation can also appear as plain text, for instance—makes the development process more complicated.

Even Ajax enthusiasts say caution is necessary, at least for now. "Long term, I'll probably be using Ajax everywhere I can," Backcountry's Jenkins says. But for now he plans to keep most of his experiments in-house, where he can control the user environment closely, for instance, making sure users are all on the same browser versions and all have JavaScript turned on.

Jenkins also says developers need to keep in mind that Ajax isn't an all-or-nothing proposition. For instance, he points to a browser-based ERP client that Backcountry developers built in part using asynchronous JavaScript, but without the XML. The application uses the Postgres open-

Ajax looked promising as the glue that could hold easily remixable Web services together.

have to consider those expectations now." He points to the *Script.aculo.us* JavaScript libraries and the Prototype JavaScript framework as good examples of tools now available to help developers get up to speed with Ajax.

But even while they need to pay attention to the opportunities Ajax offers, enterprises should realize that browser-based JavaScript support is still fraught with potholes, particularly if you want to work across platforms such as Windows, Unix and the Macintosh as well as across browsers such as Internet Explorer, Safari and Firefox.

Sachin Shah, senior product manager at online job-listing site SimplyHired, says companies must make sure their Ajax fea-

source database on the back end, Jenkins says. "I know where all the data fields are," he adds. "I don't need all the XML fields"—a situation that simplifies development.

Security is another issue. While the foundational pieces of Ajax aren't new, their widespread use in combination is, and the security ramifications of that are not completely understood. Suffice it to say that Ajax is vulnerable to the same things as are the base components: JavaScript and XML. Then

Keep Up Online

Technology Editor Christopher Lindquist scours the **best of what's on the Web** when it comes to emerging technology. Read his blog, **TECH LINKLETTER**, at www.cio.com.

cio.com

Googlemapsman ia.blogspot.com

lists dozens—if not hundreds—of sites creating "mashups," or online applications merged with Google Maps, including municipal transit trackers, real estate sites and even a marriage proposal.

add a few other vulnerabilities. For instance, according to the vendor, Scalix's Web Access e-mail client is careful to clear traces of itself from the browser's cache once a session ends, preventing thieves from rummaging through your e-mail messages once you leave. Use of a JavaScript obfuscator can also help protect the intent of your code from prying eyes.

Where Ajax Is Going

The exact direction Ajax takes from here on is anyone's guess, although it's a safe bet that frameworks and tools will rapidly mature and diversify. Microsoft, for instance, is working to release a set of integrated tools called Atlas next year that will combine Ajax with elements of the Visual Studio and ASP.Net toolset. (And the company is promising that it will maintain cross-platform compatibility on the browser side.)

Whether all the new development options create a scenario where users revolt against overused Ajax widgets—much as they did the "blink" tag—remains to be seen. For now, however, commercial applications such as the Zimbra and Scalix e-mail systems are showing Ajax to good effect—and helping pave the way for enterprise-class development frameworks. **cio**

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FREE CODE



Open source is becoming a vital piece of enterprise infrastructures. Open-source development is becoming a moneymaking proposition. And now understanding the companies that sell and the communities that create open-source code is becoming a critical part of the CIO's job.

BY CHRISTOPHER KOCH

The future of open source is not Linus Torvalds.

It's Marty Roesch.

In 1998, Roesch, then 28 and an engineer at telecom company GTE-I, created an open-source program called Snort for detecting intrusions into computer networks. Today, he sheepishly acknowledges that he's a multimillionaire, having sold Sourcefire, the company he created to sell add-ons to Snort, for \$225 million to security software leader Check Point. (The deal is expected to be finalized before the end of the first quarter 2006.)

Reader ROI

- How open source is being monetized
- Why CIOs need to know open-source business models
- Which business models will thrive; which won't

Roesch's road to riches—using the Internet to distribute open-source software for free and selling proprietary (closed-source) pieces that enhance the free stuff—is emerging as the most popular new business model in the software industry, according to venture capitalists. Call it the mixed-source model. On the surface, it would seem to offer the best of both worlds: CIOs get free software, and the companies developing the code get e-mail addresses from downloaders, so they can try to sell them proprietary add-ons. Venture capitalists love this model because they



Marty Roesch, who created the open-source intrusion-detection program Snort, recently sold Sourcefire, the company he built to sell add-ons to Snort, to Check Point for \$225 million. He says, "I was never motivated by financial gain. It just ended up that way."

can invest their money in software that can be sold rather than in big sales staffs or expensive marketing and branding campaigns.

But in the rush to monetize the open-source model, these startups could be on a collision course with the communities that spawned them. When a venture-backed company builds both open-source and proprietary software under the same roof, it invites a showdown between the people contributing the free stuff (the open-source community) and the company looking for competitive advantage from the proprietary stuff. "It's an inherent conflict of interest," says Jo Tango, general partner at Highland Capital Partners, a venture capital company. "Whose additions

to the software get approved? And how are those additions prioritized? Is it for the open-source product or the for-profit stuff?"

And that could lead to situations in which CIOs are seduced into using what seems to be free technology only to find they must pay to make it work down the road, says Michael Goulde, senior analyst for Forrester Research. Adds Tango: "This model has been around for years. It's called a trial version."

Proprietary software companies have been giving away trial versions of their software for years. But the code is closed, and the free versions are lesser versions of what you'd get if you paid full price. "That's no different from what these so-called open-source firms are

doing with their community [open source] and enterprise [proprietary] editions of their software," says Barry Strasnick, CIO of CitiStreet, a benefits management company.

In other words, the free stuff becomes nothing more than a come-on. Adds Lee Hughes, CIO of Owens Forest Products, "My fear is that if a company has a free open-source version and a commercial version with enhanced features, the free version [may suffer] down the line."

Why the Model Matters

Strasnick and Hughes wouldn't be so concerned if open-source software were still a

Your Guide to Open-Source Business Models

Open Source + Service

What it means: Companies sell support and services around open-source software.

Who's doing it: Compiere (ERP), JBoss (middleware), Red Hat (Linux)

Advantages for CIOs: You pay only for support, not software. The cost to switch providers is relatively low because the source code is available to anyone.

Startup challenges: Difficult to build businesses because switching costs are low, as are barriers to entry. CIOs will always favor large, established vendors over startups unless the startups also control code development. Hard to get venture funding because venture capitalists are looking for sustainable competitive advantage in their investments. Unless the software is complex or mission-critical, CIOs may choose to support it themselves.

Mixed

What it means: An open-source code base with proprietary add-ons.

Who's doing it: Sourcefire (security), SugarCRM

Advantages for CIOs: CIOs may not

need the proprietary stuff, but if they do they'll already have acquired deep experience with the open-source product before buying the add-ons.

Startup challenges: There's ample motivation to make the open-source product inferior to the proprietary package, transforming the open source into trial software. If that happens, there may be a backlash among open-source developers and users wanting to see all the code.

Open Source + Buy Off

What it means: Companies offer a proprietary license for their open-source software so that users can modify the software and redistribute it without having to make the code changes available to the public.

Who's doing it: MySQL (database), Sleepycat (database)

Advantages for CIOs: The open-source software has all the features of the proprietary version.

Startup challenges: Sales of the proprietary version are limited mostly to those companies that want to redistribute it as part of their own hardware or software packages.

Open Source + Aggregation

What it means: Companies assemble various open-source software packages into integrated units that are easier for CIOs to consume.

Who's doing it: Exadel, Navica, SourceLabs, SpikeSource

Advantages for CIOs: Simplifies open-source integration and support.

Startup challenges: Barriers to entry are low, brand differentiation is difficult, lack of ownership of open-source projects limits the influence of the company in the development of the code.

Open Source + Hardware

What it means: Hardware makers use open source as the foundation for the software that runs their machines.

Who's doing it: Cisco, Digium, Netezza

Advantages for CIOs: Lower prices on hardware.

Startup challenges: It's difficult to differentiate on hardware alone, especially when CIOs are looking to standardize their infrastructures.

-C.K.

casual plaything for their developers trying to save money on a few Web servers. But open source has become a vital part of the CIO's software acquisition strategy—especially when it comes to infrastructure software. Research company Gartner predicts that by 2010, Global 2000 IT organizations will see open source as a viable option for 80 percent of their infrastructure software investments. CIOs can't afford to treat open source as a throwaway, and they can't afford to do without support for the open source that becomes a vital component of their infrastructures.

But shopping for open-source software is a very different animal from the traditional software acquisition process. The company you're buying from is a community, the references you're checking when you're doing your due diligence are postings on a bulletin board, and the developers posting them may not even be employed.

Conventional wisdom says you don't want to see how your breakfast sausage is made, but CIOs are going to have to peek into the kitchen before committing themselves to an open-source diet. There are many different business models emerging besides mixed source (see "Your Guide to Open-Source Business Models" on Page 50), so CIOs will have to cast a careful eye on these companies and communities to predict whether they will still be around in a year or two. This is now critical business research for CIOs. It's every bit as important as tracking Microsoft's or Oracle's stock price, acquisition strategies and upgrade announcements.

The Money Game

Roesch bristles when you bring up the fears CIOs have about "crippled" open source. He's got a right to be touchy. Eight years ago, he single-handedly developed the core of Snort. Since then, he estimates that he has written 3,000 postings to the Snort discussion list and carefully built a large community of users (more than 2 million downloads and 100,000 active users, he says). In return, he got what every open-source developer craves: respect, recognition and the occasional free beer from grateful users at technology conferences.



CitiStreet CIO **Barry Strasnick** likes the services model in which a company sells support for a single open-source code base, because "all my money goes into implementation and support."

Roesch got everything except money. And that was OK. For a while.

"I was never motivated by financial gain," recalls Roesch. "It just ended up that way. People don't develop open source for monetary gain. You develop it for reputational gain."

Roesch could have used his reputation to land a high-paying job at a software company, but he liked working on Snort. So in 2001 he began courting venture capitalists to see if they would back his plans to start a company to support Snort. When he made the rounds, he says, there were no takers. "They wouldn't go near it unless we had some [proprietary]

intellectual content wrapped around Snort," Roesch says.

Once he developed some proprietary management tools and a friendly GUI to run on top of Snort, Roesch got his money. And he's never looked back, partly, he argues, because he has no choice. Snort competes against software from well-known, well-funded companies such as Cisco, and "if you're going into a highly competitive area of software, as we did, you have to take venture capital," he says, adding that others have built proprietary tools around Snort. "You're going to have people who are going

to try to ride on your coattails," Roesch says.

So far, according to Roesch, no one in the Snort community has held his financial success against him. "I like writing code," says Glenn Mansfield Keeni, a professional developer who contributes to Snort in his spare time. "I derive great satisfaction by contributing towards building a secure Internet. The code remains open source so there is no bitterness or feeling of being let down. If the commercial framework helps Snort take greater strides forward, that's welcome."

But others in the community wanted to guarantee that Snort would remain open. They formed a group in 2003 called Bleeding Snort to provide open-source intrusion-detection rules and definitions for Snort (similar to the virus definition files you download for your antivirus program). It was a prescient move. Sourcefire now makes its updates available to its paying customers first; others have to wait five days. And unlike Bleeding Snort's updates, Sourcefire's are no longer released under an open-source license. Companies that have built proprietary software on top of Snort (Sourcefire is not the only one) have to pay a fee to Sourcefire to get those updates now. But Bleeding Snort often beats Sourcefire to the punch with new rules, says Alan Shimel, chief strategy officer for StillSecure, a security software company that uses the Snort engine as part of its proprietary software. Shimel obviously has a vested interest in keeping the Snort engine open source, but he says "there were a lot of people in the Snort community who weren't happy when [Roesch] formed Sourcefire. I've spoken to people inside Check Point who say they intend to keep Snort open, but as they say, the road to hell is littered with good intentions."

For its part, Check Point's website states that it is "committed to the Snort open-source community, and we look forward to growing the Snort solution and the Snort community in the future."

But the fact is, not all open-source security software has remained open. A software package called Nessus was initially released under an open-source license in 1998, but the latest version (3.0) has been released under a commercial license (earlier versions remain available as open source)—though it is still free to

Your Open-Source Checklist

Open-source software has to meet all the usual criteria that dictate software success...and then it has to meet some more

1. The License—The most restrictive open-source license is the General Public License (GPL), but it applies only if you intend to modify the software and redistribute it. Vendors have to make the source code for their changes available or work out a deal with the copyright owner to be released from the GPL. (The Free Software Foundation, which developed the GPL, is now in the process of revising it.) If you have no intention of distributing your modifications to software governed by the GPL, or anything integrated to it, then GPL is fine. But if there's *any* chance you may distribute it outside your company, you should purchase an indemnified version.

2. The History—If the open-source project is just getting started, it may not survive. The developers' initial enthusiasm can wane; the software may encounter bugs that can't be fixed; users may abandon the project if something better comes along. You don't want to end up with an orphan product, unloved and unsupported.

3. The Community—Most successful open-source projects have a leader who is respected by the developer community and is willing to delegate important pieces of the work to others. Delegation creates a healthy environment that attracts new developers. Look for projects that have a clear process for joining the community, for managing the project and for making contributions. Find the central communication core for the project (a message board or e-mail list) and read the history.

4. Code Ownership—Companies are more likely to attract capital and build trust with customers if they own the copyright to the code they support and their developers are the project managers and primary contributors to the code base.

5. The User Community—Projects involving complex software need big, active, happy user communities. Big communities mean that the software is filling an important need and that it works well enough for users to invest time trying to make it better. Small, unhappy user communities usually mean the project is poorly managed or the software is flawed. Again, check the main discussion board.

6. The Coverage—Open source thrives only when it is attractive to a large group of users. That's why the most successful projects have been platform applications that can be used in virtually any company. Industry-specific or niche applications do not attract large communities.

7. How It Integrates—Open source is usually designed to fill a specific gap or fix a specific problem, often without concern for how the software will play with others. Check bulletin boards to see if the project's developers are open to solving user integration problems. If they're not, tread carefully.

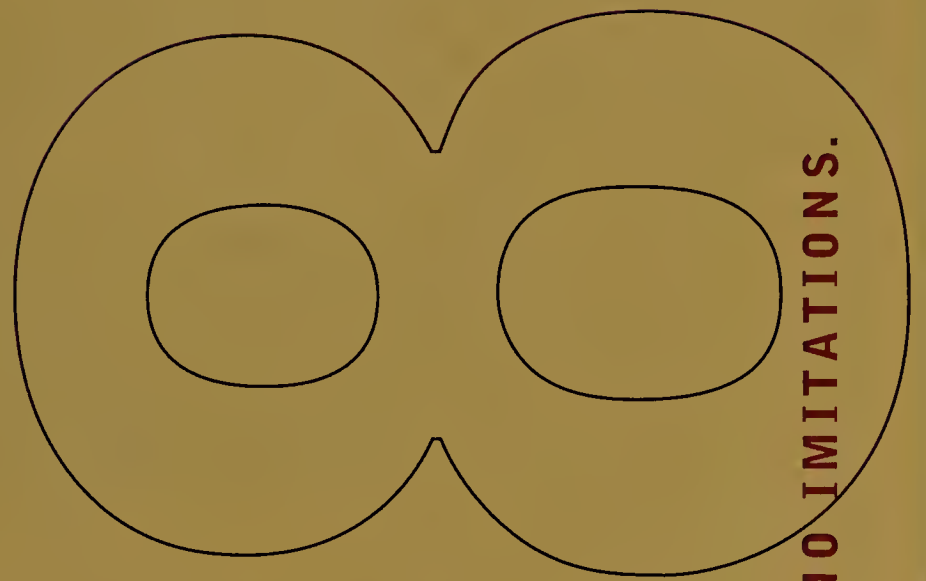
8. Commercial Support—This is one of the better indicators of a project's health. For CIOs who cannot afford to devote staff time to support, a robust commercial support ecosystem is critical.

9. Your Costs—It's easy to get carried away when something is free. Normal due diligence for open source is still in order because implementation time *isn't* free.

10. Proof of Concept—Don't overlook open source just because it doesn't scale or have all the bells and whistles. It can make a great testing platform or a proof of concept for a larger project that will use proprietary software.

—C.K.

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users. Nessus's original developer, Renaud Deraison, who, like Roesch, has started a company (Tenable Network Security), says his commercial customers pressured him to close the source. "Many of them had prohibitions against [open-source] software or had to jump through legal hoops to get permission for it," he says. "What they want is quality, free software. The license is less important." Though Nessus's shift has brought criticism from some open-source advocates on discussion websites like Slashdot.org, Nessus usage seems not to be affected—at least not yet.

Meanwhile, CIOs—who are constitutionally skeptical of vendor promises—are worried about Check Point's purchase of Snort. "It's definitely a concern," says Kirk Drake, vice president of technology for the National Institutes of Health Federal Credit Union, which uses Snort and Sourcefire's add-ons. "But it's no different from what we've seen before. We buy a good product, and it gets bought by another company and the product can change. And the pricing changes."

According to Roesch, those who see mixed source as a Trojan horse for an inevitable

march back to proprietary software are underestimating the power of the open-source community. "Check Point got one of the most tested and deployed code bases in the world, and if they manage it carefully they've got the community too," says Roesch. "I would argue that the goodwill generated by Snort among users and developers probably outweighs the value of [the proprietary software], and I think Check Point believes that as well." In other words, continuing to support an open Snort will cost Check Point less than alienating the community by closing the source.

Who Makes Open Source?

You do

As open-source software becomes increasingly important to the corporate infrastructure, IT staffs are beginning to contribute to the code bases—not just at night and on weekends but on company time. Barry Strasnick, CIO of CitiStreet, a benefits management company, sometimes turns his programmers loose on the open-source Web server program Apache—if their work has a direct benefit for the company. "We will do it on an ad hoc basis," says Strasnick. "It has to be a small project, and the benefits have to come back to me in six months, not 18."

"The quality of open source has become so high that there is now the incentive for companies to pay the staff to work on them because they reap the rewards," says Lee Hughes, CIO of Owens Forest Products, a manufacturer of interior doors and flooring. Hughes is working with open-source consultant JasperSoft to rebuild Owens' business intelligence system on top of open-source software, including JasperReports (open-source BI software), Tomcat (an application server) and Postgres (a database). But there are key pieces missing—namely a set of generic user interfaces and business rules that link to the open-source infrastructure. "It's basically turnkey except for those pieces," he says. Hughes's staff is tiny (three or four programmers), but as he expands to five or six in 2006, he wants to devote one programmer full-time to R&D—including contributing to open-source projects. "Tomcat and Postgres cut our development time for this project by a third," he says. "If we had those other pieces, we could cut it by another third. It pays to have a hand in the outcome of open source."

The open-source model is becoming so popular among CIOs, claims Strasnick, that they are banding together to do open-source development that no one else wants to touch. Strasnick says these groups are mostly formed around work that no one in the open-source community is volunteering for but that would help CIOs improve productivity. "There are things I need, but people in the community think it's too boring to work on them—like Unix utilities or an open-source Cobol," he says. Large corporations are contributing to these kinds of projects, says Strasnick, but they're doing it anonymously for fear of alerting hackers to what's in their software infrastructures.

"The open-source community is bigger than we can see," says Strasnick. "I would fund an open-source community if I had to."

—C.K.

The Trojan Horse Scenario

No one in the open-source community faults Roesch or Check Point for making money from open-source software. After all, "free as in free speech, not free beer" is the mantra of Richard Stallman, the father of the free software movement (now more widely known as open source). But the open-source community, though far from monolithic, can agree on one thing: No one likes companies that would try to use open source as a Trojan horse for fee-based proprietary software.

At some point in the near future, companies without a sufficient understanding of what makes the open-source community tick are going to test the limits of mixed source, predicts Geoffrey Moore, managing director of TCG Advisors, a consultancy. "I think there is a potential for backlash from the open-source community against companies that do not play according to the aspirations or ethics of that community," says Moore.

Fallout from this kind of uprising could put a big hurt on a CIO's infrastructure. For example, open-source projects could be left for dead by their communities, with no one left to support them. Then there's "forking," in which the open-source code base is used to start a new project that is incompatible with the original version. Finally, there's the doomsday scenario: malicious hacking of a formerly open-source code base.

CIOs are concerned about getting caught in the middle of this fragile relationship—especially if their software provider goes under. "If I have some proprietary software, I have to worry about disrupting my infrastructure if I

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need to take it out and then find a replacement for it," says Strasnick. But if the code is open, as is the case with Strasnick's JBoss middleware system, users can take the code with them to another provider if the relationship sours.

"If JBoss decides to stop supporting my software," says Strasnick, "I will have the source code, and I can simply go find someone else to support it."

Why VCs Don't Like What CIOs Want

CIOs prefer the open-source business model that Roesch couldn't sell to potential investors: a services model in which the company sells support for a single, open-source code base.

"I like the services model because all my money goes into implementation and support," says Strasnick. A few well-known open-source companies, such as Red Hat (Linux), JBoss (middleware) and MySQL (database), are built around this model. But because the software code base is open to anyone, barriers to entry for competitors are low.

These companies have to be extremely lean and mean to go up against comparable proprietary software companies. "CIOs expect to pay less for open source," says Forrester's Goulde. "It has to provide 30 to 50 percent savings." That would seem easy when the software is free, but the software usually *isn't* free for the companies that support it; many must provide their own employees to lead, manage and code the open-source products. The unpaid community that appeared around Linux took many years to develop and is the exception rather than the rule. Worse, venture capitalists don't like the services-only model because the margins on service are invariably lower than those for proprietary software. "The venture community is committed to getting a disproportionate amount of return on its capital," says Moore. "At some point, the company [they invest in] has to have sustainable competitive advantage." This helps explain why open-source companies have been slower to grow than their proprietary counterparts.

Another limiting factor is that it's next to impossible to build a business around open

Open-Source Yardsticks

Resources for CIOs

Figuring out which open-source software packages are for you is still mostly a DIY proposition. But there are a few general frameworks out there to guide you. Most offer obvious recommendations like "make sure there's good documentation," and all are untested and lack objective data about actual open-source projects, but at least they capture some of the unique issues involved in considering open source. Here are some sources to try.

Capgemini OSMM:

www.seriouslyopen.org

Business Readiness Rating for Open Source:

www.openbrr.org

The Navica OSMM:

www.navicasoft.com/pages/osmm.htm

How to Evaluate Open Source Software / Free Software (OSS/FS) Programs:

www.dwheeler.com/oss_fs_eval.html

—C.K.

source in niche markets or in vertical industries. Only a small percentage of downloaders will pay for support from vendors (for example, Snort has 100,000 regular users, but only 800 have signed up for support), and developer and user communities won't grow unless the software is used by many, many people. So big, successful open-source products have certain things in common: They are broadly applicable across many types of companies and industries, and they tend to be in areas that companies don't believe provide a competitive advantage (such as infrastructure) because everyone—including competitors—will have access to the software source code.

Yet even if the open-source software qualifies on all these fronts, building a business around it will still be difficult unless the software is complex and is an important part of keeping the business running. In this case, CIOs, especially those in small or midsize companies with small staffs, cannot afford to go without commercial support. Indeed, support is consistently the biggest concern of

CIOs on Forrester Research's surveys, according to Goulde. "We need a vendor to take a portion of the risk if we're going to go with any software package," says NIH Federal Credit Union's Drake.

And CIOs always prefer to go with a big, established vendor for support rather than a small startup. That's why MySQL, for example, has formed partnerships with Hewlett-Packard and Dell to support its open-source database. MySQL takes a cut of the proceeds, and CIOs get the warm-and-fuzzies from knowing that a big vendor is standing behind the product, according to MySQL CEO Marten Mickos.

Yet the combination of CIOs' nervousness about small vendors and the venture capital community's reluctance to back open-source software means that CIOs will see more and more mixed-source sales pitches in the coming years. It pays to vet these vendors carefully (see "Your Open-Source Checklist," Page 52).

The ROI of Trust

For his part, Roesch believes that the Snort community will survive. "Check Point needed education about why it's important to keep it open, and they get it," says Roesch. Part of that education was that the open-source development model creates relationships between project owners and users that cannot be duplicated in the proprietary world. "A lot of the guys buying Sourcefire software are people who started using Snort in college, and now they're bringing it into their companies," he says. "It's hard to quantify the value of being able to go into a sales meeting against big vendors like Cisco and having someone [from the prospect company] ask for your autograph."

But that relationship, based on mutual trust and forged over many years, is fragile. If Check Point were to shut down Snort and close the source, says Roesch, "you would lose the goodwill of the community overnight."

"Getting these people's trust takes years," he adds. "Losing it takes minutes." **CIO**

Executive Editor Christopher Koch can be reached at ckoch@cio.com.

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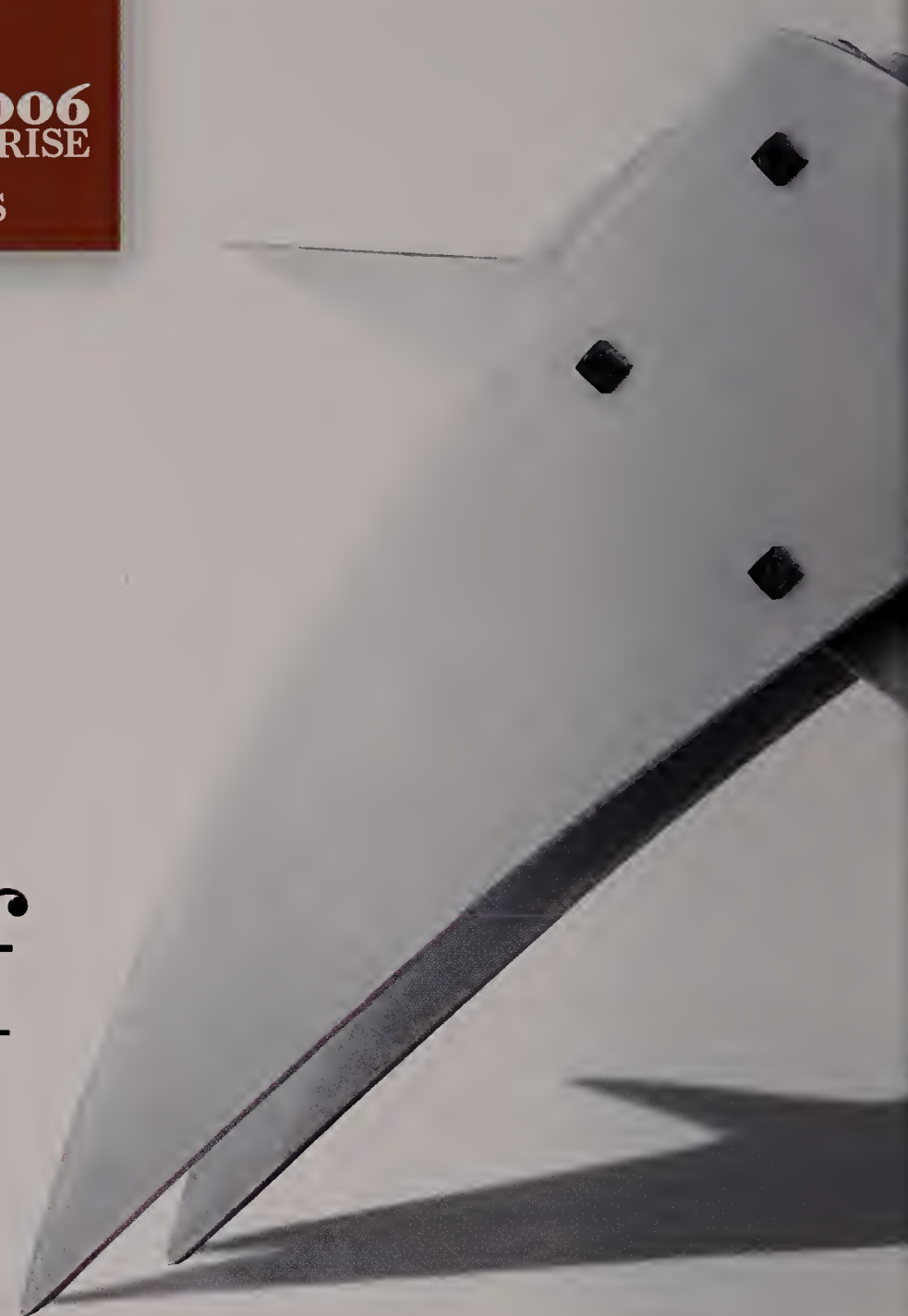
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2006
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A Brief History of IT Value

This year's Enterprise Value Awards honorees exemplify the guiding principle of IT: Data is power, and it's the job of IT to help businesses turn that data into competitive advantage

BY ELANA VARON



THE ENGLISH PHILOSOPHER Francis Bacon in 1597 proposed that knowledge is power, and that the pursuit of scientific knowledge would lead mankind to master its environment. Some 400 years later, a corollary to Bacon's proposition has become the guiding principle of IT: Data is power, and it's the job of the IT department to develop systems that collect and distribute data so that we may master our competitors.

But day in and day out, the demands of systems and schedules, bugs and budgets—just getting the job done—can distract even the most visionary CIO from technology's greater purpose. According to David Foote, president and chief research officer with Foote Partners, which studies the IT labor market, IT departments until recently tended to hire more experts in the management of systems than in the stewardship of information. This speaks to the distance that has long existed between the technologists who readied the data to be crunched by their Big Iron and those who defined and gathered it. From this arose the persistent problem of IT-business alignment and a host of other ills that culminated in last year's hot-button question: Does IT matter?

Of course it does. That artificial separation between systems and their content is no longer sustainable. Information is power and information also generates enterprise value. And the value of technology—any technology—is indivisible from the data that it stores, calculates and transports. In the 14 years since *CIO* conferred its first Enterprise Value Awards, the conception of IT value has evolved from one focused on the simple ROI of technology investments to the business benefits generated by information.

The winners of the 2006 Enterprise Value Awards, including the Grand winner, General Motors' OnStar system, and 10 other honorees in their respective industries, applied diverse technologies to their unique business problems. What they share is a commitment to generating enterprise value by unlocking information that either was buried in legacy systems or could never before be collected in a useful way.

"Great technology makes complex things simple," notes William Wray, CIO with Citizens Financial Group and an Enterprise Value Awards judge, by collecting and distributing information and generating a result from it in a way that is invisible to end users. "A good example is a cell phone. We can call someone and talk to them from almost anywhere without even thinking about what it takes to deliver that capability."

The Grand Enterprise Value Award Winner

This year's Grand Enterprise Value Award Winner, General Motors' OnStar system, exemplifies the power of IT to both define and deliver information, and in doing so provide value not only to a company but to the customer. With OnStar, GM pioneered the new field of telematics within the automotive industry: the practice of using telecommunications technology to collect data from sensors inside a system (in this case, a car) in order to monitor and improve performance. OnStar uses wireless and global positioning system (GPS) technology to gather information about a vehicle, such as problems with the antilock brakes or whether the oil needs changing. Used in a vehicle's design phase, the data allows GM to head off potential problems with its cars *before* they come off the assembly line.

In this way, OnStar is helping GM improve its cars even in the midst of its well-documented financial troubles. But beyond the corporate walls, there's incalculable value in OnStar's ability to deliver lifesaving services. If an air bag deploys in an OnStar vehicle, the system automatically dials an OnStar call center, which delivers information about the vehicle's location to the nearest emergency responders. A driver who is involved in or witnesses an accident, or suspects a problem with his vehicle, can press a button to call an OnStar operator, who relays information to emergency personnel or uses the sensor data to diagnose what's happening with the driver's car and what he should do about it. The system works even in remote areas where wireless phone service isn't available. Andre Spatz, another judge, who is the UNICEF CIO, notes that OnStar "will transform other elements of society" by, for example, enabling emergency personnel to reach accidents more quickly. (To learn more, read "Highway to Value," Page 66.)

The Industry Honorees

The remaining 10 industry honorees also found ways to deliver enterprise value by leveraging information and generating benefits from business process improvements.

Toshiba America Business Solutions (TABS) division, BellSouth and U.S. Bank responded to competition by building systems to drive sales through the delivery of more useful and manageable information to customers. When TABS, which lagged in domestic office equipment sales, focused on supporting and servicing *any* vendor's equipment, it created the Encompass system to help its salespeople create detailed proposals for customers. Using Encompass, TABS salespeople can input data about customers' needs and recommend the most cost-effective solution. BellSouth responded to demand for bundled telephone, television and data services by integrating more than a dozen systems containing ordering, pricing and billing information. Customers can now select the services they want and compare prices for different services online. Both TABS and BellSouth credit their systems for increases in sales.

Meanwhile, U.S. Bank, facing a loss of market share, built Access Online, a Web-enabled platform that its corporate credit card customers can use to access their account information and manage employee expenditures. U.S. Bank customers used the information to streamline their administrative processes and boost control over their spending, gaining \$2.4 billion in overall savings for customers. Subsequently, U.S. Bank increased its customer base by nearly one-third.

Fairfax County Public Schools, Providence Health System—Oregon and Hilton Hotels each turned to IT in order to deliver information employees and clients needed to make better decisions. Fairfax County schools used the Education Decision Support Library to put grades and test scores directly into the hands of administrators and teachers. The school department also uses the data to assess staff performance and student needs. Providence Health System uses its Disease Management System to allow physicians to coordinate the care of patients with chronic conditions.

Doctors can view all the data about patients with the same disease to determine the best way to allocate treatment resources.

Hilton used the occasion of a merger to integrate the chain's property operations systems with its call center, reservations and customer loyalty systems. Hilton's OnQ suite of applications gives hotel employees access to a complete guest profile at check-in, allowing them to tailor welcome messages and anticipate customers' needs. Hilton's internal metrics credit the system with increases in customer loyalty.

Even when the greatest benefit of a system is the efficiencies it creates, those efficiencies are due at least in part to more effective use of business data. Fleet management company PHH Arval was looking for a way to cut the cost of sending messages to its employees, customers and suppliers when it built its Notification Service. It pleased the company's drivers because they were able to choose both the information they wanted to receive (for example, about vehicle maintenance or renewing registrations) and the format (snail mail, fax or e-mail). When ADP Dealer Services, which supplies technology and business services to vehicle dealers, replaced a dozen call centers with a virtual customer service organization, it implemented a scheduling tool to ensure that staff with the correct skills would be available when customers called.

Meanwhile, the Defense Department's Standard Procurement System has helped military purchasing agents deliver goods and services more quickly, in part by ensuring that vendor contracts contain all the information needed for them to be processed. And The Hartford Financial Services Group captured more customers for its small-business commercial insurance products using its Icon 2.0 system. This set of Web-based applications simplifies the process for selling new policies, in part by tailoring the information agents have to collect from potential customers according to the type of policy they're requesting. (Find out more about all the winning systems in the "Winners Guide," Page 76.)

Winners

Grand Winner
MANUFACTURING
General Motors

Award Winners
HIGH-TECH
ADP Dealer Services Group

TELECOMMUNICATIONS
BellSouth

NONPROFIT
Fairfax County Public Schools

INSURANCE
The Hartford Financial Services Group

TRAVEL AND LEISURE
Hilton Hotels

MANAGEMENT SERVICES
PHH Arval

HEALTH CARE
Providence Health System—Oregon

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Value's Journey

When *CIO* launched the Enterprise Value Awards in 1993, IT was on the cusp of transformation. The desktop computer and the spreadsheet were barely a decade old. The Internet was the province of early adopters conversant with Unix commands. The value of technology in 1993 was measured in dollars, and the benefits tended to accrue from improvements to internal functions. The first Enterprise Value Awards honorees were organizations whose systems saved money by automating processes and reducing headcount.

Among the factors used to judge applicants in those early years was whether the business need could have been satisfied without technology, or whether IT was the best way to get the job done. Five years later, the definition of IT value had shifted. IT departments were redefining themselves as strategic contributors to the business. And the question for Enterprise Value Awards judges was not whether a technology was necessary, but whether the applicants had deployed it in a way that maximized the benefits it brought to the company and its customers.

Judges in 1998 weighed the technical excellence of a system against its alignment with the organization's key strategies, and a winning system had to advance an organization's business objectives. Based on these criteria, the New York City Department of Finance was honored for a database used to track fees and fines levied on business owners and helped the city reclaim lost revenue. At the same time, State Street Global Advisors received an award for creating a new customer service system that helped attract clients to its retirement plan management services, rocketing the company from 10th place to third in market share for its industry.

A mere three years later, IT wasn't just making business processes more efficient, or enabling better service for customers; technology was generating value by extending its benefits beyond the productivity of a single department or support of a single product line. Judges chose honorees that were transforming their companies, or even their industries. One 2001 honoree, Harrah's, built a CRM system that transformed how Harrah's viewed its customers—from "belonging" to the casino they visited most often to customers of the entire company. The system enabled the company to double its revenue through cross-marketing. The value of Harrah's system and those of other honorees that year lay in how the winning companies imagined the use of information.

The economic slump and recovery that followed raised the stakes

How We Chose the Honorees

THE RIGOROUS PROCESS for choosing this year's Enterprise Value Awards honorees took nearly a year, beginning when we solicited nominations in each vertical industry. Once the applications were in, teams of *CIO* editors, along with a review board of independent consultants and academics in the IT field, reviewed 70 applications, examining the cost, return and most importantly the strategic impact of each system. The teams read the companies' annual reports, visited their websites and conducted independent research on each applicant and its system. Review board members interviewed representatives of each organization, as well as external parties familiar with each system and its impact on the company and its industry. When this research was completed, the teams presented their findings to a panel of editors, consultants and CIOs, which chose the winner in each industry.

With the first round of judging completed, the process began for choosing the first among equals—the Grand Enterprise Value Award winner. To prepare for the next round, review board members visited the industry honorees or conducted additional phone interviews, gathering more information for a final mid-October presentation to a panel of judges comprising veteran CIOs.

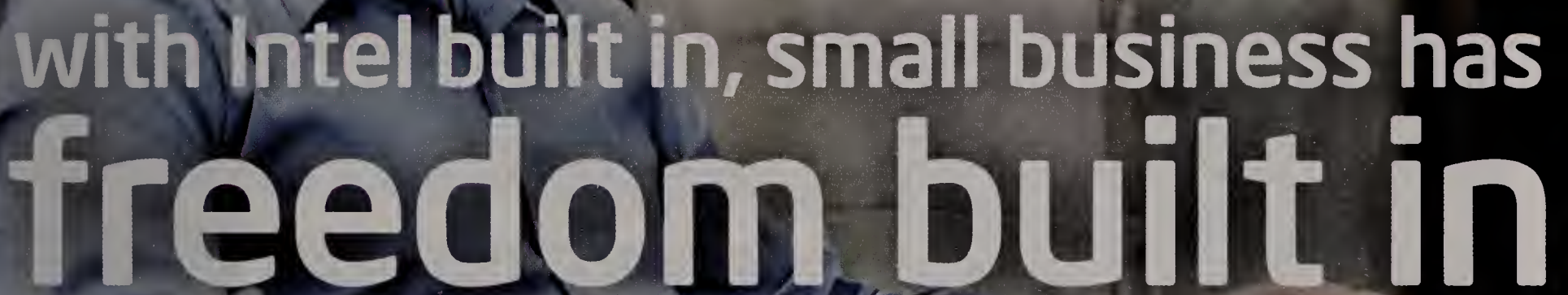
The criteria for selecting both the industry honorees and the Grand winner have evolved to encompass the strategic, financial, customer, operational and social impact of the system in question. While each of the industry honorees is considered to be deserving of the Grand award, judges had to debate the relative merits of each. They quickly honed in on GM's OnStar as the system they believed delivered on every dimension of enterprise value, including the way it transforms the carmaker's view of its vehicles, the revenue it generates, the service it provides to customers and the contribution it has made to saving lives. And although every Enterprise Value Award given to industry honorees and the Grand winner is based on demonstrable achievements, the judges this year noted that in OnStar's case, there was also a trove of value yet to be extracted by both the company and providers of emergency services. In other words, it represents not only the cutting edge of enterprise value today but also points the way to the future.

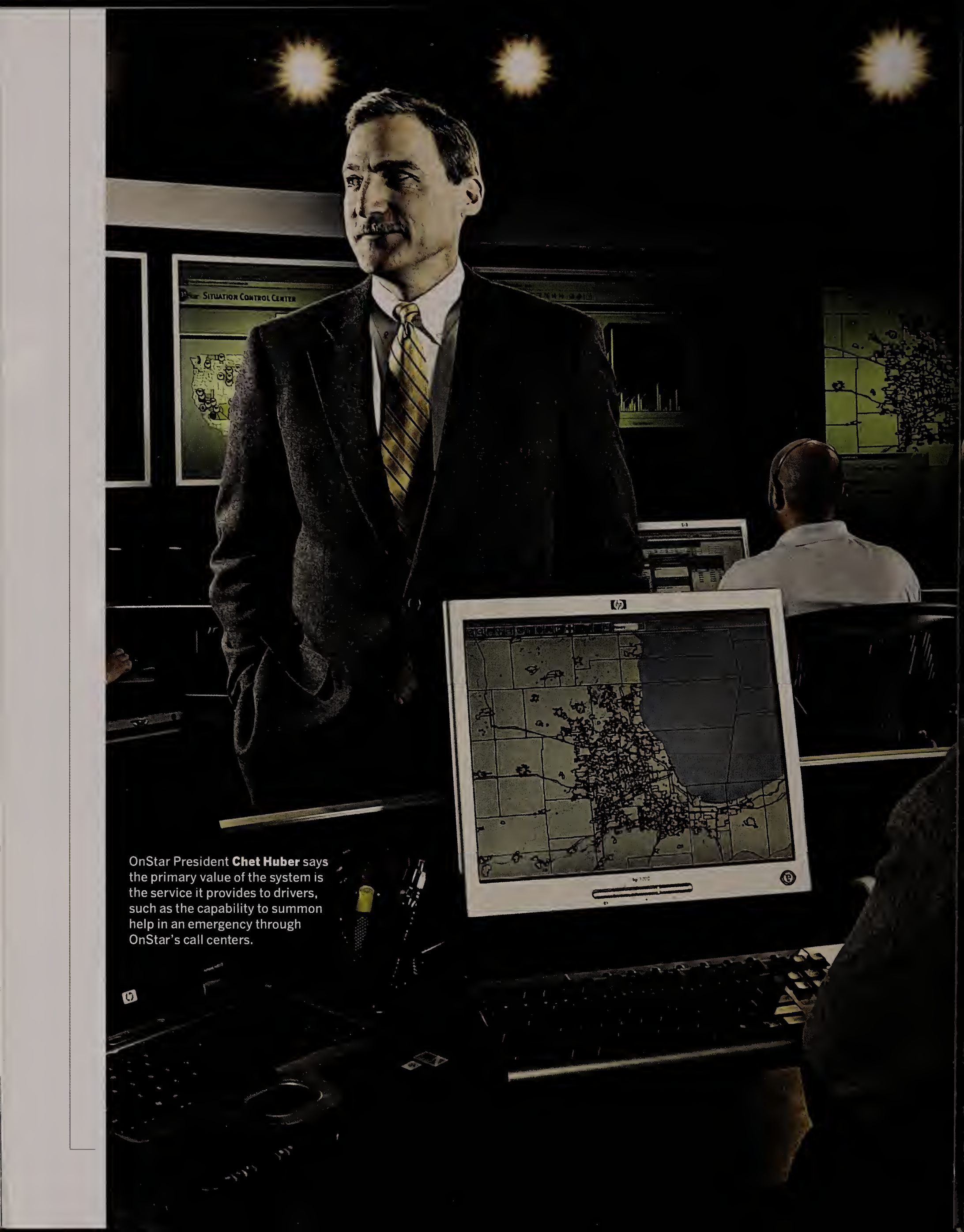
It is, concludes judge Rebecca Rhoads, CIO with Raytheon, "an indicator of how enterprise value will continue to be defined."

for IT value. More than ever, technology investments needed a clear payoff. That payoff—and the criteria by which the Enterprise Value Awards are judged—is increasingly measured in business terms: increased market share, new revenue, more choices for customers, higher margins, and improvements to education, health, safety and the environment. And it is achieved by putting critical information in the hands of employees, customers and suppliers in a form they can use.

"We watched technology evolve from supporting, to enabling, to being central and a key part of the whole value proposition" of a business, says Doug Barker, former CIO of The Nature Conservancy and an Enterprise Value Awards judge from 2001 to 2003. Barker, now a consultant, was a member of the independent review board that researched the 2006 applications. **CIO**

Senior Editor Elana Varon can be reached at evaron@cio.com.





OnStar President **Chet Huber** says the primary value of the system is the service it provides to drivers, such as the capability to summon help in an emergency through OnStar's call centers.

2006
ENTERPRISE
VALUE
AWARDS
**Grand
Winner**

Value Highway to

BY BEN WORTHEN

General Motors built the OnStar system according to a simple value proposition—helping drivers on the road helps sell cars

VALUE DOESN'T COME FROM BELLS AND WHISTLES. But if you ask Chet Huber, he'll say it comes from three little buttons.

Huber is president of OnStar, a subsidiary of General Motors that supplies emergency and roadside assistance services through wireless telecommunications and global positioning system technology installed primarily in GM vehicles. The three little buttons—on a car's rearview mirror or dashboard—provide a simple user interface to the OnStar system. Drivers use a red button to call emergency services; a blue one to call an OnStar operator for directions and other services, such as hotel locations; and a white one to use a voice-activated telephone. There are no distracting displays for drivers to master; OnStar's technical wizardry is hidden under the hood.

The simplicity of the design, Huber says, has been critical to OnStar's ability to attract nearly 4 million subscribers, who pay at least \$16.95 a month. And each month subscribers use those three buttons to initiate 23,000 calls for roadside assistance and 5,000 good Samaritan calls for emergency services. Also every month, OnStar call center operators notify emergency responders of 950 automated air bag deployments, unlock 43,000 car doors, locate 450 stolen vehicles and respond to 380,000 requests for directions. Because of these services, OnStar helps differentiate GM cars in the marketplace. Half of GM's dealers report that OnStar helps them sell more cars.

Meanwhile, OnStar has enabled GM to pioneer the field

Reader ROI

- :: How OnStar's value to GM evolved over time
- :: Why GM stuck with OnStar despite missteps by business leaders
- :: The role marketing plays in IT decisions

of telematics, the integration of telecommunications and vehicle technology. Car companies usually measure their contact with customers in months—years if the customer gets his car serviced somewhere other than the dealership. Automakers and computer scientists have long believed that using IT to establish a connection between the manufacturer and the car could not only enhance the customer's driving experience but would help maintain the relationship between the customer and the carmaker. In 10 years,

OnStar has grown from a research project aimed at proving this concept, to what will be a standard feature of every new GM vehicle in the United States and Canada.

The system's capabilities have grown as well. The most high-tech feature of the initial version was that it automatically notified emergency services if a car's air bag deployed. Today's system can remotely diagnose many of a car's problems, such as whether the oil needs to be changed. "They were the first in, and they remain the only major player" in

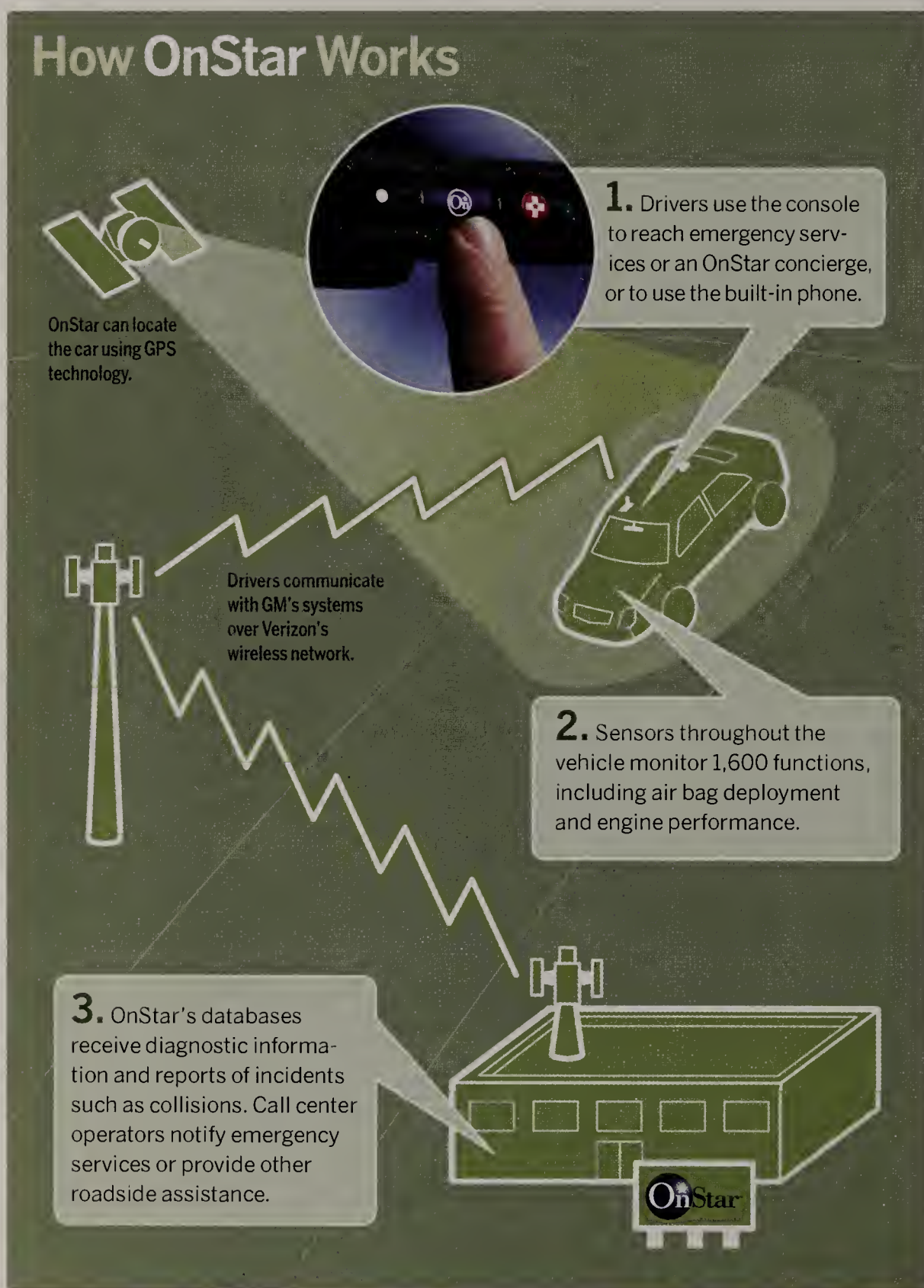
the telematics field, says Paul Hansen, publisher of *The Hansen Report*, an automotive electronics newsletter.

For all of these reasons, OnStar is being honored with *CIO's* 2006 Grand Enterprise Value Award. "OnStar's value transcends even 'Enterprise Value' by creating a new standard in customer interaction that will be seen as the reference model for years to come," says Gregor Bailar, CIO and executive VP with Capital One and an Enterprise Value Awards judge.

OnStar is one of the few bright spots for the struggling automotive giant, which lost almost \$5 billion in 2005. GM's stock hit a 23-year low in December amid news that it vastly overstated its fiscal year 2001 profits and that it was laying off 30,000 employees. While no one expects OnStar to solve GM's problems, company executives believe it can help.

GM does not report OnStar revenue separately; executives say the division is small but profitable. Industry insiders say that OnStar's revenue is about \$1 billion a year, a drop in the bucket for the \$194 billion company. But its value has permeated GM, sometimes in ways that are hard to measure precisely. OnStar's brand recognition is a significant weapon in an industry where one-tenth of 1 percent in market share is worth hundreds of millions of dollars. Furthermore, due to its subscriber volume, the connection between the car and the car company allows GM to understand its products with a greater level of detail than its competitors, according to Hansen. As a result, GM can identify and fix vehicle design problems before its cars hit the road, which can help the company avoid billions in recall and warranty costs.

OnStar's journey to enterprise value did not follow a straight path from inception to success, however. "While we had big ideas for OnStar, we weren't certain what OnStar's value eventually would turn out to be," says GM CEO Rick Wagoner. The division took several wrong turns in its short history. During the Internet boom, executives fell prey to the temptation of offering any service that its cutting-edge technology could support. They didn't get OnStar back on track until the company remembered its core value to GM: enhancing the experience of driving a



GM vehicle. Says Wagoner. "As the business has evolved, and our experience has grown, we've actually been able to create more value for our customers while providing significant benefits to GM."

The Beginning of the Road

Chet Huber is a fit 51, with a trim, gray mustache that doesn't bode well for his considerably browner hair. He has worked at GM since he was 18, when he enrolled in a mechanical engineering program at the General Motors Institute, a cooperative college run by the automaker (now the independent Kettering University). He interned with the company's locomotive division and stayed there for the following 23 years, rising to general director for sales, marketing and product support. Huber has the energy and conviction to sell anything big, whether a train or an idea.

Recognizing his potential as a business

leader, GM paid for Huber's Harvard MBA in the late 1970s. In 1994 he became the first civilian to attend the Industrial War College, the school where the armed forces send soon-to-be generals and admirals. When Huber graduated in June 1995 with a master's in national resources strategy (a program that analyzes private industry's role in military preparedness), Harry Pearce, then GM's vice chairman, asked him to look at some technology the company was experimenting with and see if he could turn it into a product.

In the mid-1980s, GM acquired EDS, the IT services firm, and Hughes, an aviation electronics company. GM was looking for ways to apply EDS's expertise in IT infrastructure and Hughes's expertise in vehicle electronics. Engineers had experimented by connecting pagers to cars in order to establish a data connection and had looked into how GM might buy wireless frequencies from the government to develop its own cellular network. But these projects remained in the back rooms of R&D labs until 1994, when

two technologies became commercially viable that could connect them and fulfill the vision for telematics: GPS and nationwide cellular telecommunications coverage. GM appointed a team of researchers to integrate GPS and cellular communications with an onboard computer system. The engineers had already built the first version of such a system when Huber joined the team. Huber decided to commercialize the technology around a simple premise: If you had a serious accident, GM would send an ambulance to get you. The company would sell safety and peace of mind.

Turning Huber's idea into reality was far from simple, however. Most of the technologies involved worked better in a lab than in real life. The GPS did work; as long as a car was in range of the satellite, OnStar could tell where it was. When an OnStar operator received a call or data that an air bag had deployed, he could pass on the car's location information to police and rescue workers.

Getting notification of an accident in the

Big Brother on Wheels?

Wherever you go, GM knows where you are. But it promises not to tell.

IF YOUR CAR IS EQUIPPED WITH ONSTAR, General Motors knows where you are. And that has raised concerns among privacy advocates that the data from OnStar could be used by those such as law enforcement, marketers or divorce lawyers to monitor individuals' activities.

Chet Huber, president of GM's OnStar division, says that the company's policies for collecting and using data are designed to maximize privacy protection. He says that OnStar has no plans to sell the information it collects for marketing or any other purpose. "We're not going to sell information about your oil level to the local oil change guy," he says. The company does not store vehicle location information. It locates vehicles only to the extent necessary to provide its services, or to comply with a court order.

This policy has come under fire not only from privacy advocates, who worry about any system that can collect location information, but also from law enforcement advocates. A Memphis newspaper recently accused GM of contributing to the death of a carjacking victim because an OnStar operator refused to track the man's stolen vehicle until it was clear police would get a court order.

Jim White, a lawyer with Moore & Van Allen who has written about telematics and privacy, says there are few legal precedents that address the use of location technology. As such, he worries about the law of unintended consequences. "You start [collecting] individual pieces of information that seem benign," he says. "But when you begin to combine bits of information it becomes less and less so." White says OnStar, in storing data only in aggregate, is walking a fine line. "It is disingenuous to talk about aggregate data when you have the ability to differentiate it," he says. There may not be a business case for creating individual profiles today, White adds, but there may be someday, and that's when potential privacy violations will become a concern.

Huber says he never wants his company to deviate from its commitment to customer privacy. "The moment we start to go down that path is the moment we compromise the relationships that we have spent 10 years trying to build," he says. "As long as we use the information in aggregate for the good of the entire network, we are in good shape."

—B.W.

first place was a bigger challenge. In 1995, no wireless carriers had a national network. There were many regional ones, but carriers were worried about getting paid by callers who didn't subscribe to their service. Most either wouldn't connect calls from unrecognized users or required credit card validation before completing a call. For OnStar, this wasn't an option—the system's selling point was its ability to automatically place a call if an air bag deployed. "We couldn't teach everyone's air bag their credit card number," quips Huber.

Ultimately, OnStar negotiated a deal with the carriers to route emergency calls to an 800 number. OnStar promised to pay for the calls if for some reason the carrier couldn't collect from the drivers. "Because we were GM, people believed us," says Huber. Other kinks in the cellular network had to be straightened out as well. For example, cellular companies didn't always keep their software up-to-date, which might prevent OnStar from accessing a network. GM ended up working with cellular carriers to identify dead spots or areas that hadn't received software upgrades.

The hardware—basically a cell phone integrated with an onboard computer—presented another problem. It was expensive. Initially, each OnStar system cost GM \$800 to manufacture and install. "We knew we could make the technology work," says GM Group VP and CIO Ralph Szygenda. "The question was if we could make a viable business case."

To find out, GM decided to provide the system as a dealer-installed option on three 1997 Cadillacs: the STS, DeVille and Eldorado. OnStar would cost \$895. Cellular service (which customers had to arrange on their own) and installation brought the price tag to \$1,395. Because the system was an add-on, it had to compete with other extras. Nonetheless, OnStar seemed to pass its first market test. By January 1998, the service had 20,000 customers. Huber announced a goal of 100,000 subscribers by 1999. But by March 1999, OnStar had only half that. GM executives concluded that the system was too expensive, and Huber's goal seemed unreachable.

Subscriber volume was important because

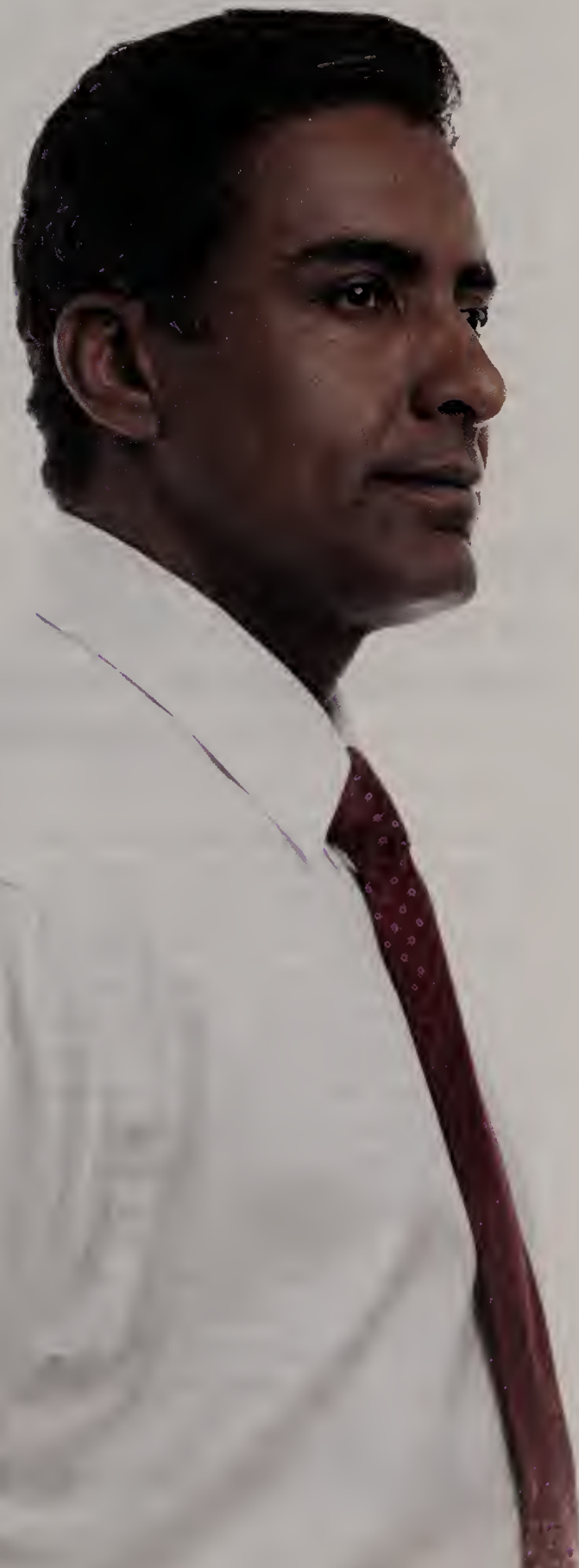


OnStar can help GM avoid manufacturing defects, says Group VP and CIO **Ralph Szygenda**.

Huber's business plan called for the OnStar division to support itself. Though he never doubted that OnStar could help GM differentiate its vehicles, he knew that it would be difficult to convince corporate leaders that any increase in sales were the result of his system rather than, say, a better vehicle design. In order to get the company to stand by OnStar, OnStar would have to stand on its own. But there was no way the division could make a profit with the dealer-installed model.

"It was low volume and a tough transaction," says Huber.

The only way to gain the economies of scale OnStar needed was to install the system in the factory. But doing so posed a financial risk, because drivers who bought the cars with OnStar installed could decide not to subscribe to the service. Nevertheless, in January 1999, as subscriptions plateaued, chairman and CEO Wagoner agreed the company would begin to make OnStar a standard fea-



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ture in new models and include the first year of service in the purchase price of the car. "We knew from our early experience and research that if OnStar's services were priced right and easy to use, that customers would consider them valuable," says Wagoner.

Furthermore, executives realized that they had a chance to establish GM as the leader in telematics. In their minds this justified the risk. "If this had been a me-too service, the risk tolerance would have been a lot less," says Huber. By adding OnStar to new models in phases, GM could abandon the system if it proved unpopular. But a mitigation strategy only goes so far. "We bet that if we built it, they would come," says Szygenda. "And if they didn't come, we would be in a world of trouble."

Detour on the Dotcom Highway

The division's prospects blossomed as OnStar-equipped vehicles began to roll off the assembly line. Production costs plummeted, and the customer base grew to 500,000 by November 2000. Meanwhile, the rise of the Internet not only validated the telematics

forming cars into "personalized portals." Startup ATX sold a similar service to Mercedes and other luxury brands. In an attempt to fight off the competition, GM reached agreements with Acura, Audi, Isuzu, Lexus, Subaru and Volkswagen to install OnStar in their vehicles. IDC (a sister company to CIO's publisher) forecast that telematics would be a \$42 billion industry by 2010. In 2001, Ron Zarella, then-president of GM North America, predicted that OnStar would boost GM's profits by \$1 billion a year.

Huber admits that OnStar—like other organizations—got caught up in dotcom craziness. "Back then guys like [Sun CEO] Scott McNealy were saying that the guys in Detroit ought to wake up and realize that they are selling Java browsers on wheels and that no one cares about cars anymore," he says.

But at the time, OnStar was growing. The system was available in more than half of all new GM models and had 2 million customers. However, there were already signs of trouble. While the company had no problem getting customers—GM was giving OnStar away for all intents and purposes—it was struggling to hold them. According to OnStar, the retention rate was below 50 percent.

the United States. While there are probably an infinite number of services that would appeal to your passengers, often it's just you in the car. Hopefully you're not watching a movie.

Koslowski's research showed that what customers wanted were services that would improve safety and ease of driving. Around the same time, Huber's focus groups were starting to tell him the same thing. When he asked people why they hadn't renewed their OnStar subscriptions, they told him that they never used any of the concierge-style services. "We'd say, 'What about the part that saves your life?' And they'd say, 'Oh, it does that too?'" In its rush to create more services, OnStar had strayed from its core value proposition: safety and security. "We had to undergo a complete revision about how to create a brand and what a brand stands for," says Huber.

In January 2002, while OnStar was reinventing itself, Ford folded Wingcast, writing off \$100 million in the process. Wall Street, bullish about telematics just a year before, did an about-face. But GM's senior leadership stood by the division. "Our next announcement was that we were going on more vehicles, and then finally it was like, Maybe there is an approach here that works," Huber recalls.

In 2003, according to *AdWeek*, OnStar spent \$45 million on advertising, including a TV campaign launched in September of that year featuring real calls to OnStar service centers. The campaign returned OnStar to its focus on safety. By the start of 2004, OnStar had 2.5 million customers and claimed that its renewal rate was more than 50 percent. Tom Keery, president of Frost Motors, a Cadillac dealership in Newton, Mass., says that the advertising campaign resonated with the public. "People will now walk in because of OnStar," he says.

Meanwhile, OnStar was finding other ways it could add value to GM. By 2004, the system was so well integrated with the car's central computer that OnStar could detect hundreds of vehicle problems as they happened. The current version improves the system's data collection capabilities by using sensors to gather information from parts of a vehicle that aren't connected to the com-

"OnStar's value transcends even 'Enterprise Value' by creating a new standard in customer interaction that will be seen as the model for years to come."

—Gregor Bailar, CIO and executive VP, Capital One

vision; it also pointed to the system's potential for providing services to drivers. OnStar succumbed to dotcom fever, and the business strategy expanded into offering concierge-style services. "Our theory was the more we do, the better, because people will find something that they like," says Huber. In February 2000 OnStar launched its first integrated advertising campaign, premiering an ad during the Academy Awards telecast that featured Batman using an OnStar-equipped Batmobile.

Meanwhile, OnStar's success attracted competitors. Ford launched its own telematics service, Wingcast, and Ford's CEO at the time, Jac Nasser, talked about trans-

Industry analysts placed it as low as 20 percent or 30 percent. "[The telematics vendors] thought that people wanted to replicate the PC in a car," says Thilo Koslowski, an automotive analyst with Gartner Research. "But being in a car is about getting from point A to point B." In August 2001 Koslowski published research showing that there was very little demand for Internet-based services. OnStar's bubble was about to burst.

The Right Direction

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puter. OnStar can diagnose approximately 1,600 problems, and GM uses this information three ways.

First, OnStar helps consumers service their cars. If the engine light goes on, a customer can call an OnStar operator, who downloads the car's diagnostic data, tells the driver what the problem is and lets him know whether he should pull over immediately. In addition, OnStar recently launched a remote diagnostics program that sends customers a monthly e-mail about what's happening inside their cars: everything from whether the oil needs to be changed to how antilock brakes are performing. This idea was a result of market research. "I still remember the tapes of this woman in Phoenix," Huber says, recalling one focus group. "She said, 'I don't want diagnostics. I want triage. Take my vehicle and put it in one of three buckets,'" green, yellow or red, which will tell the driver whether a part is fine, needs attention or is an immediate risk. "We architected the whole vehicle diagnostics program around what this lady said."

The diagnostics data also allows OnStar to become, in effect, a giant CRM system. Rather than limiting its interactions with customers to the point of sale and the times the customer comes to the dealership for service, GM has an opportunity to interact with its customers every single day. Not only can this build brand loyalty in customers but the company now has a much richer understanding of how people use their cars. Wagoner says that incorporating OnStar data into the company's business processes has become a required practice for everyone at GM in the United States and Canada, from dealers to engineers.

Real-time information about the vehicles also gives GM early warning of problems that may be a result of design flaws. Industry analysts say that most automakers don't learn about such problems until at least 18 months after the car has gone to market. That's how long it takes for owners to discover a problem and take the car to the dealership, for the dealership to pass that information back to the manufacturer, and for the manufacturer to understand what that data is telling them and decide whether

a recall is warranted. A large recall can cost a car manufacturer billions.

If an OnStar-equipped vehicle has enough sensors, there is virtually nothing the company can't learn about it. Huber says that GM has been "aggressively capturing all kinds of operating characteristics" from test models driven by GM engineers, and that this information has already resulted in design changes before the vehicles reached production. GM executives do not like to provide

"We have been running computers to assist the business for longer than I've been around GM. But we are just learning what we can do in the vehicle."

-GM CIO Ralph Szygenda

details about what they do with this information because they believe the data gives the company a competitive advantage. GM executives also worry that customers would view this data collection as a privacy violation, even though GM says it collects it only in aggregate (see "Big Brother on Wheels?" on Page 69). However, both Huber and Szygenda acknowledge that the data has the potential to save the company billions of dollars by avoiding manufacturing defects and recalls.

The Road Ahead

This year 3 million GM vehicles will come equipped with OnStar. The system will be standard in every GM car by the end of 2007. Huber says that the renewed emphasis on safety, and the accompanying advertising campaign, has helped drive customer retention rates up to around 66 percent. Also, a few years ago, the division reached a deal with Verizon to provide wireless telephone services to customers, bringing in extra revenue and making the OnStar serv-

ice more appealing. The OnStar phone is one of the 3-watt clunkers that early adopters used to carry around like a briefcase, so it gets reception in areas that handheld phones, which typically have only 250 milliwatts of power, do not. Voice-activated dialing makes calling safer.

As OnStar stepped up its advertising campaign, focus group testing showed that the public's association of the brand with GM increased. In recognition of this, OnStar

changed its name to OnStar by GM in 2004. The company is no longer trying to get OnStar into other automakers' vehicles. Other automakers aren't keen, either, to deploy a competitor's technology. Audi, Subaru and Volkswagen have stopped installing OnStar in their cars.

GM's new strategy for OnStar recognizes that OnStar's value is not as an independent product but as a tool for manufacturing. "We can save GM a lot of money," says Huber. With the ability to help improve vehicles during preproduction and differentiate them post-production, OnStar could improve GM's bottom line.

At this point, says Szygenda, OnStar's capabilities are limited only by its engineers' imaginations. For all its sophistication, "it is an immature application," he says. "We have been running computers to assist the business for longer than I've been around [GM]. But we are just learning what we can do in the vehicle."

Ultimately each decision about OnStar will be made according to the lesson about value that it took GM nearly 10 years to learn: Focus on your core business, and don't get seduced by what technology allows you to do. "We have an IT capability," says Szygenda, "but we are a car company." **CIO**

E-mail feedback to Senior Writer Ben Worthen at bworthen@cio.com.

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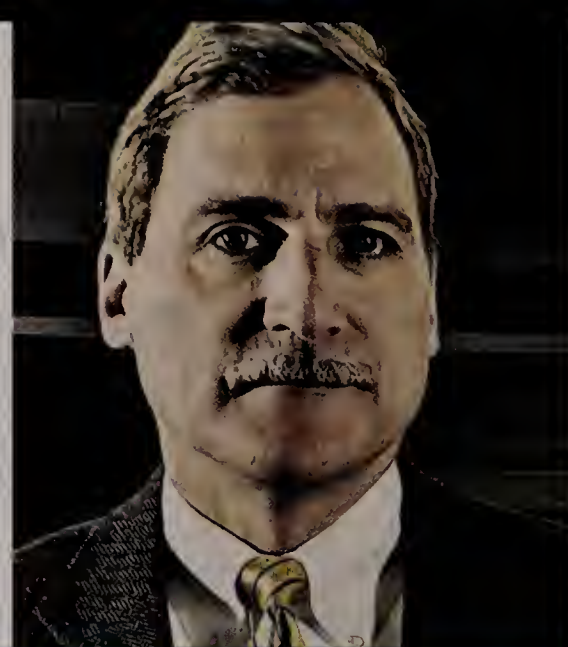
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Winners



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CHET HUBER

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General Motors Corp.

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LOCATION: Detroit

REVENUE: \$193 billion

EMPLOYEES: 375,000

www.gm.com

WINNING SYSTEM: OnStar uses wireless technology and the global positioning system satellite network to deliver 24-hour emergency assistance, telecommunications services and vehicle diagnostic information to 3 million subscribers who own GM vehicles. OnStar provides services such as automatic notification to emergency responders when a vehicle's air bag deploys, stolen vehicle location assistance and remote door unlocking. Three small buttons placed along the dashboard or on the vehicle's rearview mirror allow instant access to an OnStar call center representative, to 911 emergency call centers or hands-free wireless calling.

BUSINESS VALUE: OnStar contributes to driver safety and security and, as a result, provides GM with an additional selling point for its vehicles. OnStar's call center staff responds monthly to 450 reports of stolen vehicles, 950 air bag deployments and 85,000 roadside assistance calls. Emergency personnel can be contacted through three OnStar call centers, which are connected to more than 9,000 emergency response centers in the United States and Canada. General Motors says 80% more customers have become repeat customers since OnStar was introduced, and GM's dealers report OnStar helps them sell more automobiles. In addition, GM says that data collected from vehicles through OnStar is used to make improvements to vehicle performance, helping the company avoid product recalls.

SUCCESS STRATEGY: GM kept the user interface simple. In addition, after initial marketing missteps, the company focused OnStar services on features related to the safety and performance of its vehicles.

INVESTMENT: Unavailable

KEY TECHNOLOGIES: GPS satellite network; IBM, Sun Microsystems and Hewlett-Packard client/server systems (for hosting call center, voice response systems, website and data delivery applications); Avaya switches for voice and data calls, as well as Cisco for pure data services; Verizon wireless telecommunication services

I.T. EXECUTIVE: Ralph Szygenda, group VP and CIO, General Motors

BUSINESS SPONSOR: Chet Huber, president, OnStar

WHAT WE LIKED: Created a public service that helps to save lives and simultaneously benefits the core business of manufacturing and selling cars.

COMPILED BY AL SACCO

PHOTOS LEFT BY ROY RITCHIE

ADP Dealer Services Group

INDUSTRY: High-tech

LOCATION: Hoffman Estates, Ill.

REVENUE: \$1 billion

EMPLOYEES: Unavailable

www.dealersuite.com

WINNING SYSTEM: ADP Dealer Services provides technology and data services such as business intelligence and CRM to nearly 20,000 vehicle dealers in the United States, Canada and Europe. Over four years, ADP Dealer Services combined a dozen call centers into one virtual support organization, which the company runs using its support virtualization and automation system. The system provides several functions: It monitors customer applications, alerting the help desk to problems and enabling many of them to be fixed before clients are aware of them; it delivers patches and software upgrades to customers automatically; and when clients do call with a problem, the system routes them to the first available agent (in the past, clients were sent to regional support centers, based on their location).

BUSINESS VALUE: ADP Dealer Services' customer support satisfaction rating reached an industry high of 91.2% in 2005, according to third-party research. The system enabled the company to reduce operating costs by \$21.7 million over five years and, ADP says, contributed to \$14 million in additional sales.

SUCCESS STRATEGY: The company crafted business rules so that customer calls were routed to the most qualified personnel, and it designed the system to make it easier for customers to use. Meanwhile, a global workforce provides customers with quicker, more efficient service.

INVESTMENT: \$2,761,283 over three years

KEY TECHNOLOGIES: Blue Pumpkin resource planning and management tools; Smart Desktop Agent software for automated customer support; internally developed applications

I.T. EXECUTIVE: James Foote, senior director, field technology and technical services

BUSINESS SPONSOR: William Heffern, VP, ADP division client relations

WHAT WE LIKED: Improved efficiency and customer satisfaction at the same time.



FRANCIS A. DRAMIS JR.



RON FRIESON

BellSouth Corp.

INDUSTRY: Telecommunications

LOCATION: Atlanta

REVENUE: \$20.3 billion

EMPLOYEES: 62,654

www.bellsouth.com

WINNING SYSTEM: BellSouth provides local telecommunications services for nine states in the Southeast. Project Rodeo is a set of integrated applications that enable consumers to customize the package of products and services they order, such as telephone service, Internet access or digital TV. The system, comprising 14 preexisting internal applications integrated with internally developed middleware, can calculate prices and apply discounts for bundles of services as the customer mixes and matches product choices.

BUSINESS VALUE: The system helps BellSouth compete with cable and telecommunications operators. Since 2003, the company has gained 26,000 new subscribers, earning an additional \$15 million in annual revenue. BellSouth execs see bundled services as the key to customer retention in an era when consumers can choose among telecommunications providers.

SUCCESS STRATEGY: The marketing department identified the business need to offer consumers more flexibility and demonstrated to IT the business case for providing bundled services.

INVESTMENT: \$17.5 million for development; \$1.1 million for annual maintenance

KEY TECHNOLOGIES: Oracle database; internally developed middleware

I.T. EXECUTIVE: Francis A. Dramis Jr., chief information, e-commerce and security officer

BUSINESS SPONSOR: Ron Frieson, VP, transition and strategy, consumer services

WHAT WE LIKED: Redesigned and integrated existing applications to respond more quickly to customer demands.

JAMES FOOTE

WILLIAM HEFFERN



Fairfax County Public Schools

INDUSTRY: Nonprofit

LOCATION: Fairfax, Va.

BUDGET: \$1.8 billion

EMPLOYEES: 21,500

www.fcps.edu

WINNING SYSTEM: The Education Decision Support Library (EDSL) is a centralized data warehouse containing student grades, test scores, disciplinary actions and other school data. A Web interface allows administrators, school board members, principals, teachers and community leaders to create customized reports about student achievement, program participation and departmental operations. The data is used to assess student performance, make decisions about students' needs and allocate educational resources.

BUSINESS VALUE: By making it possible for individuals to generate reports, EDSL has reduced administrative costs by more than 20%. The time it takes to distribute students' achievement test results has been slashed from two or three months down to 24 hours, enabling students to retake exams that they don't pass. The school department says that better information about student—and staff—performance has led to increased passing rates for minority students in reading and math, and helped bump up overall standardized test pass rates by at least 5%.

SUCCESS STRATEGY: The IT department obtained continual feedback throughout the software development process from its application user group as well as subject-specific focus groups. It also created the role of data steward to manage data centrally, ensuring information published to the system is accurate.

INVESTMENT: \$276,000 for development; \$184,000 for annual maintenance

KEY TECHNOLOGIES: Oracle database; Informatica PowerMart to cleanse and validate data; Business Objects' Crystal Enterprise for generating reports

I.T. EXECUTIVE: Maribeth Luftglass, CIO and assistant superintendent

BUSINESS SPONSOR: Betsy Fenske, assistant superintendent and leadership team member

WHAT WE LIKED: Distributed performance data in a timely and useful manner, enabling more effective decision making.

MARIBETH LUFTGLASS

BETSY FENSKE



JOHN CHU



JAMES M. REUL

The Hartford Financial Services Group Inc.

INDUSTRY: Insurance

LOCATION: Hartford, Conn.

REVENUE: \$22.7 billion

EMPLOYEES: 30,000

www.thehartford.com

WINNING SYSTEM: The Hartford sells personal and commercial property and casualty insurance. Icon 2.0 is a proprietary, Web-based system that makes it easier for agents to sell the company's policies to small businesses. The system integrates and simplifies several legacy applications for quoting premiums and for submitting and underwriting policies. Authorized agents can access these applications through a single interface called the Electronic Business Center.

BUSINESS VALUE: Icon 2.0 has enabled The Hartford to capture 30% more qualified business, resulting in a 21% sales growth in its small-business segment in 2004 (competitors showed single-digit growth during the same period). The company says that because the system is easy to use, it has increased the number of agents selling its policies from 18,000 to 26,000.

SUCCESS STRATEGY: The Icon 2.0 team understood that the key to getting independent agents to sell more of The Hartford's policies was to make them more productive. By enhancing usability and making applications, such as quoting or submissions, readily available on the Web, The Hartford enabled remote agents to gain quick and easy access to the company's products.

INVESTMENT: \$21 million for development during two years; \$1.8 million for annual maintenance

KEY TECHNOLOGIES: J2EE architecture; Jacada Interface Server for mainframe interface

I.T. EXECUTIVE: John Chu, senior VP, P&C e-business and technology

BUSINESS SPONSOR: James M. Reul, senior VP, select customer

WHAT WE LIKED: Increased yield from agents by making legacy applications easier and less time-consuming to use.

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JAMES T. HARVEY



TOM KELTNER

Hilton Hotels Corp.

INDUSTRY: Travel and leisure

LOCATION: Beverly Hills, Calif.

REVENUE: \$4.1 billion

EMPLOYEES: 67,660

www.hiltonworldwide.com

WINNING SYSTEM: OnQ, Hilton Hotel's customer-management system, allows hotel managers at any Hilton-branded property to access centralized information about customers, their preferences and their use of hotel facilities in order to provide customers with an individualized experience. Hotel staff members can manage property level operations, like maid and room-catering services, as well as sell rooms and services across brands, based on customer data in OnQ. The system also delivers real-time business intelligence reports to hotel operators, franchisees and owners.

BUSINESS VALUE: Between the initial deployment of OnQ in 2000 and last year, the system has generated \$204.5 million in cost and productivity savings. In 2004, the company identified \$4 million in annual savings due to greater operating efficiency in its 20 hotels that produce the most revenue.

SUCCESS STRATEGY: OnQ was conceived when Hilton acquired Promus Hotel (including the Doubletree, Embassy Suites, Hampton Inn and Homewood Suites brands) in 1999. Hilton's IT team didn't assume that their technology infrastructure was superior to that of Promus's. Instead, Hilton combined the best features of each company's legacy systems. Next, the company convinced its franchisees to adopt OnQ by reimbursing them for any investments they had made in previous software applications.

INVESTMENT: \$40 million for software; \$53.5 million for hardware and infrastructure; \$60 million annual maintenance

KEY TECHNOLOGIES: Service-oriented architecture employing Microsoft .Net for employee-facing property operations applications; J2EE for consumer self-service transaction needs; Unix with open-source standards

I.T. EXECUTIVE: James T. Harvey, senior VP and CIO

BUSINESS SPONSOR: Tom Keltner, executive VP and president, brand performance and franchise development group

WHAT WE LIKED: Used the acquisition of a competitor as an opportunity to improve functionality of legacy applications and make business operations more efficient.

PHH Arval

INDUSTRY: Management services

LOCATION: Sparks, Md.

REVENUE: \$1.3 billion

EMPLOYEES: 1,400

www.phharval.com

WINNING SYSTEM: PHH Arval provides fleet management services for corporate customers, managing about 1 million vehicles for clients ranging from small businesses to companies in the Fortune 500. After changing its business model from managing companies' in-house fleets to providing business-process outsourcing services, the company built its Notification Service in order to more efficiently manage communications with both corporate fleet managers and more than 100,000 drivers who serve them. The system routes some 60,000 messages concerning scheduling and account information to end users every month in multiple formats, including e-mail, fax and postal mail. Users can specify in which format they would like to receive messages based on message content.

BUSINESS VALUE: The Notification Service has reduced the cost of sending a single communication by as much as 96%. In addition, company surveys have found that driver satisfaction has increased seven percentage points, from 84% to 91%, because the system helps them to be more efficient. Drivers no longer have to call PHH Arval or log onto a website to get information about their customers or vehicles.

SUCCESS STRATEGY: PHH Arval took the time to rethink the business processes it used to communicate with customers and suppliers before building a new system.

INVESTMENT: \$295,000 for development; \$25,000 annual maintenance

KEY TECHNOLOGIES: SeeBeyond eGate for enterprise application integration; WebSphere MQ and Java Messaging Service to transport XML messages; Sybase ASE 12.0 database; Enterprise Java Beans; Macromedia Cold Fusion

I.T. EXECUTIVE: Timothy Talbot, senior VP and CIO

BUSINESS SPONSOR: Susan Stiles, manager, customer and vehicle services

WHAT WE LIKED: Used simple technology to deliver a big payoff in efficiency and customer service.

TIMOTHY TALBOT



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Providence Health System—Oregon

INDUSTRY: Health care

LOCATION: Portland, Ore.

REVENUE: \$2 billion

EMPLOYEES: 14,000

www.providence.org

WINNING SYSTEM: The Disease Management System (DMS) helps physicians manage chronic health conditions among their patients by incorporating patient medical records and benchmarks for treatment into a single Web-based application. One hundred and fifty doctors at 22 clinics around Oregon use the DMS to make diagnoses and prescribe treatments based on Achievable Benchmarks of Care (ABC)—treatment models based on data from Providence patients with similar conditions. Doctors use the DMS to query Providence's electronic health record data for patients with specific diseases, which allows them to study these past cases for more informed diagnoses.

BUSINESS VALUE: Providence reports the system enables doctors to improve patient health and safety by ensuring that patients with chronic diseases such as diabetes receive regular checkups and have their medication use monitored. As a result, the company has saved roughly \$4.4 million annually by avoiding hospitalizations and misdiagnoses. In addition, Providence has attracted new physicians to its network, generating an estimated \$3 million in additional revenue per year.

SUCCESS STRATEGY: Providence built the DMS as an extension to an electronic health records system that all of its doctors were already using. In addition, the doctors were closely involved in defining the standards of care they would be asked to achieve.

INVESTMENT: \$240,400 for development; \$206,840 for annual maintenance

KEY TECHNOLOGIES: GE Medical Systems Logician EHR system; Oracle 8i database; Microsoft .Net for data extraction; Microsoft SQL server for the disease registry database

I.T. EXECUTIVE: Laureen O'Brien, CIO

BUSINESS SPONSOR: Craig Wright, MD, CEO

WHAT WE LIKED: Built upon an existing system that doctors trusted and provided new tools that helped them do a better job.

LAUREEN O'BRIEN



CRAIG WRIGHT



RANDY MILLER



RICK TAYLOR

Toshiba America Business Solutions Inc.

INDUSTRY: Retail/Wholesale/Distribution

LOCATION: Irvine, Calif.

REVENUE: \$275.8 million

EMPLOYEES: 3,105

www.copiers.toshiba.com

WINNING SYSTEM: Toshiba America Business Solutions (TABS) sells and services fax machines, copiers and other office equipment in the United States, Latin America and the Caribbean. In 2003, the company changed its business model from providing only products—such as printers and fax machines—to offering services such as equipment maintenance and cost-per-print analyses (how much it costs a company each time something is printed). TABS's Encompass Document Analysis Program supports this business model. The system enables dealers to quickly and accurately assess the document production environment of potential customers and provide recommendations for equipment and services that help them save money and improve office efficiency.

BUSINESS VALUE: TABS reports Encompass has generated \$58 million in incremental profit over three years and led to an increase of 1% in market share against 11 competitors. Purchases of equipment from TABS by dealers who use Encompass have grown at four times the rate of purchases by nonusers. Customers are able to reduce their document printing costs by up to 40%.

SUCCESS STRATEGY: Got salespeople to adopt the system quickly by making it simple to use.

INVESTMENT: \$879,000 for development and software; \$127,000 for annual maintenance

KEY TECHNOLOGIES: J2EE architecture, BEA WebLogic Portal 8.1; Interwoven Teamsite 5.5 for content distribution and management; Linux/Intel infrastructure, Oracle 9i for storage

I.T. EXECUTIVE: Randy Miller, VP of IT and CIO

BUSINESS SPONSOR: Rick Taylor, CEO and president

WHAT WE LIKED: Used technology to differentiate itself from competitors and improve its position in the market for office equipment.



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WILLIAM C. CHENEVICH

U.S. Bank

INDUSTRY: Banking

LOCATION: Minneapolis

REVENUE: \$182 million

EMPLOYEES: 51,000

www.usbank.com

WINNING SYSTEM: U.S. Bank, a subsidiary of financial services giant U.S. Bancorp, is the world's largest provider of corporate procurement card programs, according to industry analysts. Access Online is a self-service system that enables accounts payable managers and others involved with corporate spending control to manage procurement, travel and other corporate expenses incurred by employees on their U.S. Bank credit cards. Managers can use Access Online's Web portal to set up and maintain cardholder accounts, manage transactions, transfer data files and run financial reports.

BUSINESS VALUE: Access Online enabled U.S. Bank to increase its market share by increasing its overall commercial charge card volume 22% (a total of \$19 billion). As a result, the company's revenue nearly doubled in the first year the system was deployed. In addition, the system saves the company \$1.2 million annually by reducing operating costs, and, according to internal surveys, has boosted customer satisfaction scores by 17%.

SUCCESS STRATEGY: The company seized first-mover advantage by recognizing that other customers would benefit from the same self-service capabilities it had built for a key customer, the U.S. government.

INVESTMENT: \$18,382,000 for development; \$568,000 for annual maintenance

KEY TECHNOLOGIES: J2EE architecture; Tibco; DB2; WebFocus reporting toolset

I.T. EXECUTIVE: William C. Chenevich, vice chairman and CIO

BUSINESS SPONSOR: Joe Hasten, formerly vice chairman, corporate banking and corporate payment systems

WHAT WE LIKED: Listened to customers and built a system that can be easily tailored to meet each customer's needs while at the same time decreasing the company's own operating costs.

U.S. Department of Defense Standard Procurement System

INDUSTRY: Government

LOCATION: Fairfax, Va.

BUDGET: \$59 billion

EMPLOYEES: 43,000

www.spscoe.sps.eis.army.mil

WINNING SYSTEM: The Standard Procurement System (SPS) is an automated acquisition tool that is replacing more than 70 separate purchasing and contract management applications used by the U.S. Department of Defense. SPS facilitates ordering and delivery of materials, supplies and services for defense personnel and contractors.

BUSINESS VALUE: It used to take two and a half hours for a vendor to receive a purchase order from the DoD. With SPS it now takes 10 minutes. According to the department, SPS saves taxpayers \$1.08 billion by reducing accounting errors, processing time and system failures, among other improvements. In the 800 locations where SPS has been deployed, it has made DoD operations 70% more efficient by enabling faster delivery of goods and services to defense employees and contractors who need them.

SUCCESS STRATEGY: When designing the system's features, DoD took advice from the purchasing agents who would use the system.

INVESTMENT: Approximately \$1 billion for development; about \$30 million for annual maintenance

KEY TECHNOLOGIES: Sybase Adaptive Server Enterprise (ASE) database; WebMethods trading networks

I.T. EXECUTIVE: Col. Quentin Peach, program manager

BUSINESS SPONSOR: Gabrielle Ward, senior procurement analyst

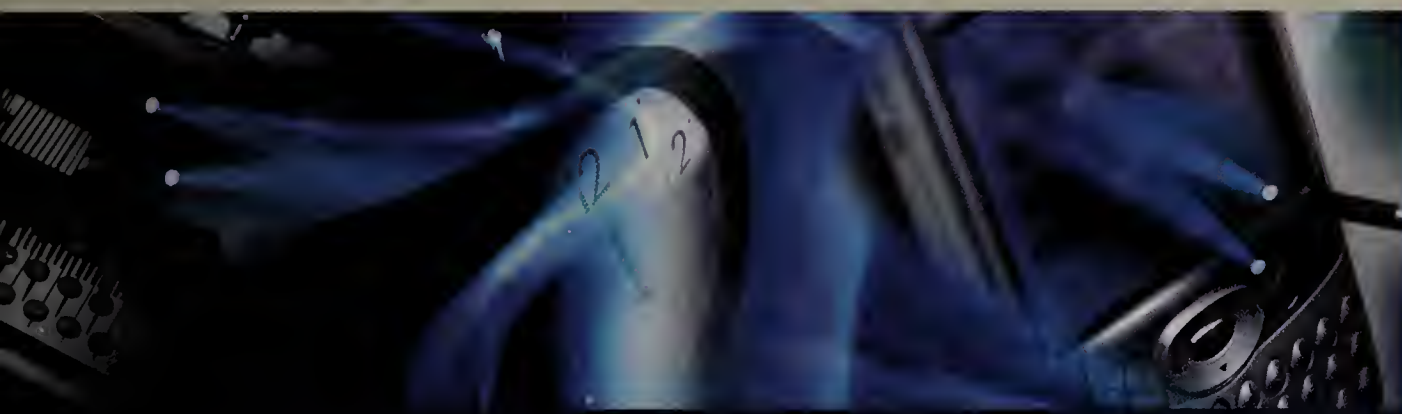
WHAT WE LIKED: Deployed SPS throughout the Defense Department as the only business system used by every branch of the military.

COL. QUENTIN PEACH



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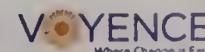


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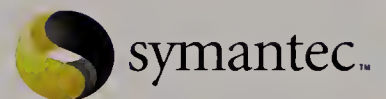
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endlines

BY SCOTT KIRSNER

TRAVELS WITH MY GHERKIN

Dear Diary,

BY RFID TAG 7-0622-01002

Oct. 18, 2006: Mom says I wasn't so much born as self-assembled, in a plant just south of San Jose. When I was encoded, I was named 7-0622-01002, after my grandfather on my dad's side, who was a prototype. He died during the terrible Heat Test of 2003.

Oct. 27, 2006: I know that no tag can choose his product. But a young guy can't help but daydream about buddying up with package of Gillette Mach3 razors or a case of Michelob. I'm trying to keep my spirits up, though, and do the best job I can providing total supply chain visibility for this jumbo jar of gherkins.

Nov. 6, 2006: Finally left the Vlastic factory. Earlier in the day, we were put into a cardboard box and then stacked on a pallet and wrapped with plastic. A forklift picked us all up and took us through a corridor lined with RFID readers. The ride was a thrill, as the forklift had to lurch backward and forward through the corridor and do a couple 360s to make sure all us tags got read.

Nov. 9, 2006: A moral quandary. Our truck driver, Leon, stopped for an unusually long time in Las Vegas. We sat parked for who knows how long (well, I do: approximately 32h:41m:09s) in the parking lot behind a Red Roof Inn. Must an RFID tag divulge everything he knows? The question turned out to be moot, since there were no readers in the vicinity to report to.



Nov. 10, 2006: The distribution center is so big. My friend, 24601 for short, says it's not a good idea to hang out with the untagged products. But is it a roll of generic toilet paper's fault that he's not valuable enough to warrant a tag of his own?

Nov. 13, 2006: Another truck ride. Headed to "The Show"...the supermarket shelf. Don't these drivers ever signal before they turn?

Nov. 15, 2006: This is what everything has been leading up to: the condiments and canned goods aisle of the Shop Smart, in Jacksonville, Fla. Feels as though I've just stepped onto a Broadway stage for the first time.

The only glitch: I'm not listed in the playbill. Technically, no one knows I'm here, because the RFID readers in the

store's stockroom didn't see me. Darn this RF-scattering metal lid and all this RF-absorbing pickle juice!

Nov. 21, 2006: Finally placed into a shopper's cart. It's great to think about finding a home; not so great to think about being deactivated at the checkout counter. Curse those privacy advocates!

This is it...the conveyor pulling me inevitably toward the cashier. I feel one last pulse of RF energy. My last report: "Here I am! 7-0622-01002! That's me! I'm being bought!"

I want to believe that there's life after deactivation, in a warm maple cabinet in the suburbs somewhere. The current issue of the *Weekly World News* says Johnny Cash, Kurt Cobain and Elvis just played a concert for famine relief in heaven. If it's in the paper, then it must be true, right?



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